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On the Heterocera of Mt. Caragan (Philippines, Mindanao Is.) with some remarks (Lepidoptera)

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Abstract: On the Heterocera of Mt. Caragan (Philippines, Mindanao), with some remarks. *Misc. Pap*. 190: 1-50, 76 figs, 5 maps

This paper deals the faunistic list of a small Heterocera collection from Mt. Caragan (Mindanao Island, Philippines). Totally, 163 species of 12 families are listed with synonyms. New faunistic records are mentioned. Seven species is new for the fauna of the Philippines. Similarly, more than 70 species are new for Mindanao Island. Genitalia and adult specimens of important species are illustrated. Molecular evaluations and comments are given to certain taxonomic groups.

Key words: Aganaidae, Arctiidae, Bombycidae, Geometridae, Lasiocampidae, Limacodidae, Lymantriidae, Noctuidae, Notodontidae, Pyralidae, Thyatiridae, Thyridae, Lepidoptera, Heterocera, fauna, Philippines, Mindanao, Mt Caragan, DNA.

Within the private project of the Cesa on the Lepidoptera of the Philippines (LPH)[2], the aim is to evaluate faunistically the lepidopterological material preserved in the Cesa Collection from the following mountains (with codes): Mt. Kanlaon (Knl), Mt. Manapang (Mpl) (Negros), Mt. Matutum (Mtu), Mt. Caragan (Crg), Mt. Apo (Apo), Mt. Kitanglad (Ktd) (Mindanao), Mt. Baloy (Bly) (Panay, Iloilo), Mt. Malindog (Mdg) (Panay, Aklan), Mt. Balacaue (Blc) (Leyte), Mt. Pulaq (Pq) (Luzon), Mt. Olangu-an (Olg) (N. Palawan), and Chocolate Hills (Bohol).

Mount Caragan is an interesting locality in Mindanao Island and poorly known by the lepidopterists. In the popular maps, this locality is not shown. Kemal, Kızıldağ & Koçak (2018: 2) discussed the case of Mt. Caragan. Schintlmeister (2004) reported also Mt. Caragan in his descriptions of six *Lymantria* taxa from the Philippines. For example, following paratypes of the *Lymantria* species were from Mt. Caragan in the "Prov. Davao del Norte":

1♂ paratype of *Lymantria bivittata* ssp. *roseides* (Schintlmeister,2004: 41)
9♂ paratypes of *Lymantria semperi* (Schintlmeister,2004: 92)
3♂ paratypes of *Lymantria naessigi* (Schintlmeister,2004: 134)
2♂ paratypes of *Lymantria eckweileri* (Schintlmeister,2004: 152)
2♂ paratypes of *Lymantria rhabdota* ssp. *stephani* (Schintlmeister,2004: 166)
2♀ paratypes of *Lymantria karsholti* (Schintlmeister,2004: 208)

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[2] https://www.researchgate.net/project/On-the-Lepidoptera-of-the-Philippines-based-upon-the-Cesa-Collection-LPH

Fig. 1 – *Plusiopalpa adrasta*. Lateral view of the head. Philippines, Mindanao Is., Davao, Mt. Caragan, M. Kemal (Cesa)

The Heterocera material from Mt. Caragan (Mindanao, Davao) were collected by the local collectors and transferred partly to the Cesa Collection in 1998. Some of the species from Mt. Caragan were recently reported by the authors (Kemal, Kızıldağ & Koçak, 2018). Similarly, some Heterocera species from Bohol Island has been published (Kemal, Kızıldağ & Koçak, 2019). In the present paper, totally 163 species of 12 Heterocera families from Mt. Caragan are listed and partly illustrated. Some of them could be identified at the genus level for various reasons. Faunistically, 7 species are new records for the fauna of the Philippines. More than 70 species are newly reported here for the fauna of Mindanao Island.

All the material studied are identified by the authors, by using especially the Cesa Reference Collection. Genitalic preparats and digital images are prepared by the first author. Molecular preparation of the specimens and evaluation belong to the second author. The material and the documents are currently preserved in the Cesa Collection and Archive [3].

[3] http://entcesa.tripod.com/Cesacollection.pdf

List of the species

The Heterocera species from Mt. Caragan are listed below alphabetically. The usage of the Noctuidae and Pyralidae families are still in their classical forms. The symbol * denotes that the mtCOI DNA of the species will be examined separately.

Aganaidae

1.*Agape chloropyga* (Walker,1854)

Synonym(s): chloropyga Walker,1854; analis Walker,1856; cyanopyga R.Felder,1874; snelleni Gaede,1914
Original reference: *Hypsa chloropyga* Walker,1854, List Spec. lepid. Insects Colln Br. Mus. 2: 454-455. Type: Australia.
Range (in code): **AU CN Yu MY MM TH CMa Int Knc VN ID Bor Snd Mlc Aru Bor Flo Ja Sum Crm Clb PG NBr PH Luz Mno Crg**
Remarks: Previously reported by Kemal *et al.* (2018) from Caragan.

2.*Asota heliconia* (Linnaeus,1758)

Synonym(s): heliconia Linnaeus,1758; dama Fabricius,1775; monycha Cramer,1779; silvandra Stoll,1782; doryca Boisduval,1832; intacta Walker,1854; lanceolata Walker,1856; clavata Butler,1875; dicta Butler,1875; zebrina Butler,1877; venalba Moore,1877; leuconeura Butler,1879; perimele Weymer,1885; semifusca Butler,1887; nicobarica Swinhoe,1892; malisa Swinhoe,1892; ghara Swinhoe,1892; lara Swinhoe,1893; enganensis Rothschild,1896; natunensis Rothschild,1896; murina Rothschild,1896; timorana Rothschild,1896; kalaonica Rothschild,1896; riukiuana Rothschild,1896; philippina Rothschild,1896; sangirensis Rothschild,1896; bandana Rothschild,1896; kiriwinae Rothschild,1896; #extensa Rothschild,1896; #diluta Rothschild,1896; #brevipennis Rothschild,1896; #nervosa Rothschild,1896; extensa Seitz,1914; atrata Jordan,1924
Original reference: *Phalaena heliconia* Linnaeus,1758, Syst. Nat. (Edn.10) 1: 511. "Habitat in Calidis regionibus".
Range (in code): **MM Tns TH CMa Int Knc CN TW JP Ri ID Egg Tim PH Pal Bal Ley Blc Mno Crg Neg Boh Luz Pq Sam Sib AU PG Bor Sbh KBa Nia Snd Bli Aru Amb Crm Adm Bsm Nk Ja Clb**
Material studied: 4♂2♀. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Previously reported by Kemal, *et al.* (2018) from Caragan.

Arctiidae

3.*Barsine euprepioides* (Moore,1862) (Fig. 59)

Synonym(s): euprepioides Moore,1862; inclusa Snellen,1877; interserta Moore,1878; #samboanganus Strand,1922
Original reference: *Hypoprepia euprepioides* Walker,1862, J. Proc. Linn. Soc. Lond. (Zool.) 6: 102. Type♀ : "Sarawak".
Range (in code): **VN IN SI Nag ID Sum MY Bor Swk Ja Sla Snk MM TH CMa CDo CD2 Nan Rng Pgg Uth Nna Tng Pkk Cph Nst Ptg Yal Rat Knc PH Mno Zmb Crg MM IN SI Peg CN Yu**
Material studied: 1♀. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

4.**Barsine* sp.1

Range (in code): **PH Mno Dav Crg Mtu**
Material studied: 1♀. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector. Further specimens: 3♂. Mindanao Island, S.Cotabato, Mt. Matutum, 8-9.03.1996, local collector (Cesa).
Remarks: Small species with creamy ground colour. Upperside of forewing, veins black at outer part, black discal spot and three zigzag transversal median lines well-developed. Hind wing without marking. Apparently, this species belongs to *Barsine zebrina* – group, somewhat nearer to *Barsine rhipiptera* (Wileman & West,1928), with the exception of median zigzag lines on forewing. The identity of these specimens are still ongoing.

5.Barsine* sp.2**

Range (in code): **PH Mno Dav Crg**

Material studied: 1♀. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: Small species, fore-wing ground colour reddish with a large, almost ∞–shaped grey marking. Postdiscal grey, 4-5 striae distinct. Hind-wing creamy with slight pinkish submarginal suffusion. The identity of this specimen is still ongoing.

6.Eugoa* sp.? n.**

Remarks: Cerny and Bucsek (2014) reviewed the species of *Eugoa* and allied genera of the Philippines. The present species under discussion differs all the species of the *Eugoa* from the Philippines both externally and the male genitalia (GP3069). Clearly, it belongs to *bipunctalis* group, containing *bipunctalis*, *mangle*, and *alleni*. Among them, the present species seems nearer to *alleni*, described by Holloway (2001) from Brunei. Under such problematic condition, DNA analysis of the related species is inevitable. However, there is no published DNA information about *alleni*, *mangle* or *bipunctalis* to be compared. MtCOI barcoding of our *Eugoa* specimen will be prepared soon. Nevertheless, our final decision on the identity of this taxon will be given soon as a seperate paper based on the morphological characters.

7.*Lemyra philippinica* Thomas,1990

Synonym(s): philippinica Thomas,1990

Original reference: *Lemyra philippinica* Thomas,1990, Nachr. ent. Ver. Apollo (N.F.) Suppl.9: 49-50, figs. Holotype ♂: Philippinen, N-Luzon, Banaway (BMNH).

Range (in code): **PH Luz Pan Mno Crg Ley Blc Neg Mpl Knl Ceb**

Previously reported by *Kemal et al.* (2018) from Caragan.

Material studied: 2♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

8.*Nyctemera (Arctata) robusta* Vos & Cerny,1999

Synonym(s): robusta Vos & Cerny,1999

Original reference: *Nyctemera robusta* Vos & Cerny,1999, Nachr. ent. Ver. Apollo (N.F.) 20 (2) (2): 167-170, figs. Holotype ♂: Philippinen, Mindanao, Bukidnon, Mt. Kitanglad 1700m, leg. V.Siniaev (CMWM).

Range (in code): **PH Mno Bkd Ktd Apo Crg**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

9.*Spilosoma strigatula* Walker,1855

Synonym(s): strigatula Walker,1855; cervina Wallengren,1864

Original reference: *Spilosoma strigatula* Walker,1855, List Specimens lepid. Insects Colln Br. Mus. 3: 613. Type: Burma.

Range (in code): **CN MM TH ID PH Luz Mdo Pal Olg Boh Mno Crg**

Material studied: 2♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: New record for the fauna of Mindanao Island.

10.*Spilosoma virgulae* Cerny,2011

Synonym(s): virgulae Cerny,2011

Original reference: *Spilosoma virgulae* Cerny,2011, Entomofauna 32 (3): 54, figs. Holotype ♂: Philippines, Leyte, Mt. Balocan, Hilusig, Mahaplag (SMFL).

Range (in code): **PH Ley Blc Sam Mno Crg**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: New record for the fauna of Mindanao Island.

Bombycidae

11.*Ernolatia lida* (Moore,[1860])
Synonym(s): lida Moore,[1860]; signata Walker,1862
Original reference: *Ocinara lida* Moore,[1860], Cat. lepid. Insects Mus. nat. Hist. East-India House 2: 381.
Range (in code): **MY Bor ID Sum Ja Clb PH Mno Crg**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record for the fauna of the Philippines.

Geometridae

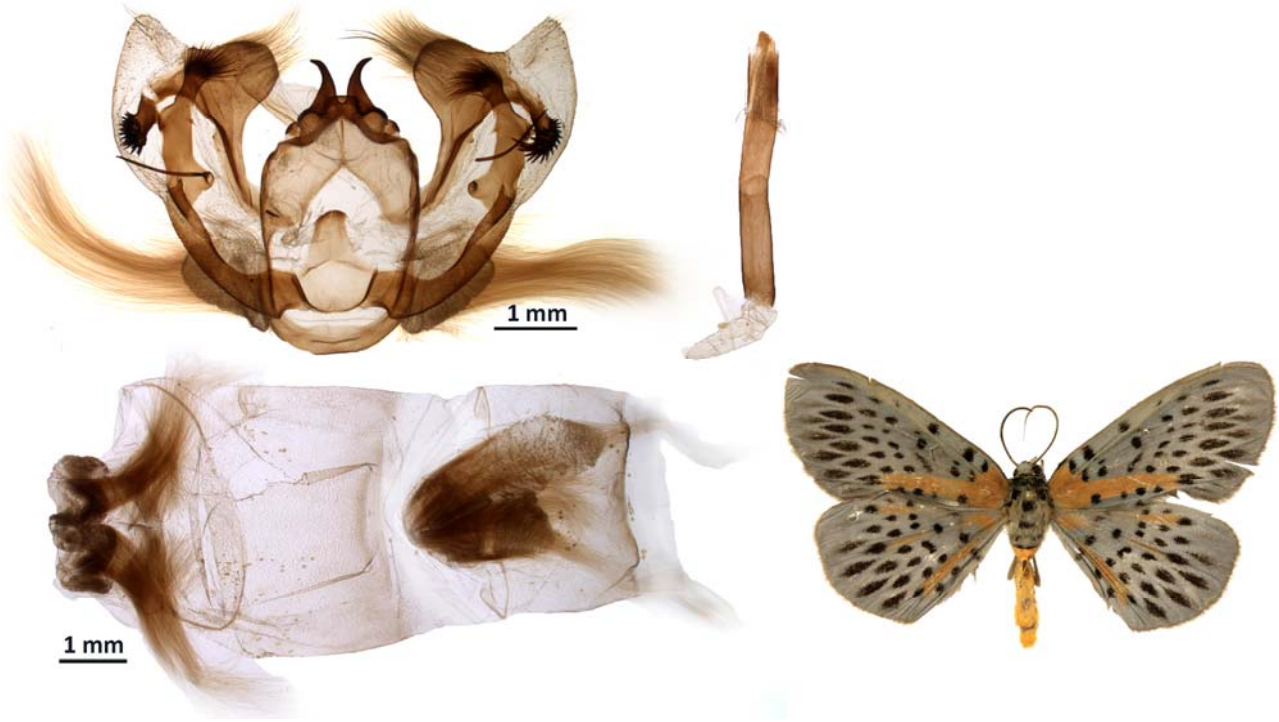
12.*Abraxas* sp.?n. (Fig. 60)
Range (in code): **PH Mno Crg Neg Knl**
Material studied: 4♂♀. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector. Further material: 1♀. Philippines, Negros Is., Kanlaon 1500m, 12-17.xii.1996, F. Mamigo & B.Villar leg. (Cesa).
Remarks: Possibly a new species. Identity of the specimens are ongoing.

13.*Achrosis* sp.
Range (in code): **PH Mno Crg**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: Identification process of the specimens is ongoing.

14.*Amraica solivagaria* (Walker,1866)
Synonym(s): solivagaria Walker,1866; ponderata Felder & Rogenhofer,1875
Original reference: *Boarmia solivagaria* Walker,1866, List Specimens lepid. Insects Colln Br. Mus. 35: 1586. Type ♀ : "Java".
Range (in code): **ID Ja Clb CN Yu TH PH Pal Mno Crg MY BN**
Material studied: 1♂. Barcoded by the Cesa (Lep-Geo016). Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New to the fauna of Mindanao Island.

15.*Borbacha punctipardaria* Holloway,1982
Synonym(s): punctipardaria Holloway,1982
Original reference: *Borbacha punctipardaria* Holloway,1982, [in] Barlow, Intr. Moths of South East Asia. Taxonomic App.: 251.
Range (in code): **MY Bor Swk TH Ntt Hba PH Mno Crg ID Sum Ja Nia Tim**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New to the fauna of Mindanao Island.

16. Bracca monochrias* (Meyrick,1897) (Figs 2-4)**
Synonym(s): monochrias Meyrick,1897; cuneiplena Swinhoe,1900; benguetana Schultze,1925
Original reference: *Tigridoptera monochrias* Meyrick,1897, Trans. ent. Soc. Lond. 1897 (1): 76-77. Type ♂: [Indonesia] “Sangir”.
Range (in code): **PH Luz Mno Crg ID Sgr**
Material studied: 1♂ (GP3110♂). Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: According to the information given by Stüning *et al.* (2017), the species from Caragan Mt. belongs to this species. Faunistically, it is new to the fauna of Mindanao Island.



Figs 2-4 - *Bracca monochrias*. Male genitalia, abdominal scent organs scaled, GP3110, and upperside of the male. Philippines, Mindanao, Davao, Mt. Caragan.

17.*Chorodna* sp.

Range (in code): **PH Mno Crg Neg Knl Mpl**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector. 4♂. Negros I., Mt. Kanlaon, 3♂. Negros I., Mt. Manapla hills 2000ft, 25-31.viii.1997, B.Villar leg. (Cesa).

Remarks: The identity of this species is ongoing.

18. Cleora alienaria* (Walker,1860) (Figs 5,6)**

Synonym(s): alienaria Walker,1860; gelidaria Walker,1863; rasanaria Swinhoe,1915; fumipennis L.B.Prout,1929

Original reference: *Boarmia alienaria* Walker,1860, List Specimens lepid. Insect Colln Br. Mus. 21: 370-371. Type(s): "Ceylon".

Range (in code): **LK CX IN Adm TH CMa Fn CDo Pki Dst Int Loe Nna Kao Nst Knc Cbi Rng PH Luz Ifg Boh Ceb Pal Mno Bkd Ktd Crg**

Material studied: 1♂ (GP3100♂). Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

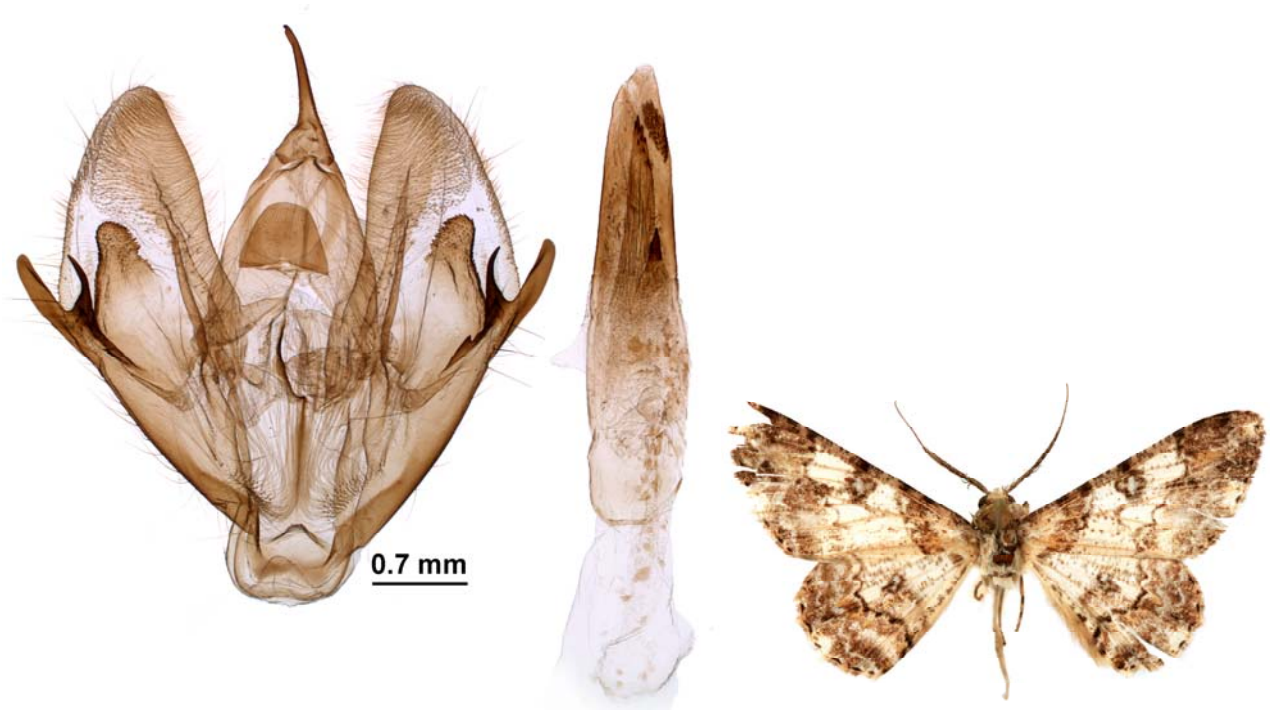
19.*Cleora dacasini* Herbulot,1981

Synonym(s): dacasini Herbulot,1981; inopinata Sato,1989

Original reference: *Cleora dacasini* Herbulot,1981, Bull. Soc. ent. Mulhouse 1981: 33. Holotype ♂: Philippines, Luzon, Baguio, Santo Tomas Mt. (ZSM).

Range (in code): **PH Luz Neg Knl Mno Ktd Bkd Tgu Crg Dav**

Remarks: Previously reported by Kemal *et al.* (2018) from Caragan.



Figs. 5, 6 – *Cleora alienaria*. Male genitalia scaled, GP3100♂, and upperside of the male. Philippines, Mindanao, Davao, Mt. Caragan.

20.**Cleora aff. pendleburyi* **L.B.Prout,1929 (Figs 7,8)**

Synonym(s): pendleburyi L.B.Prout,1929

Original reference: *Cleora pendleburyi* L.B.Prout,1929, Novit. zool. 35: 70. Syntypes: [Malaysia]: Selangor, Bukit Kutu, 3500ft. (BMNH).

Range (in code): **MY Sgo TH PH Mno Pal Crg CN Yu**

Material studied: 1♂ (GP2972♂), 1♀. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: Despite some structural differences, the specimen is temporarily identified here as "*pendleburyi* Prt." (cf. Holloway, [1994]). Investigations on the *Cleora* species of the Philippines are ongoing.

Figs 7, 8 - *Cleora* aff. *pendleburyi*. Male genitalia GP2972, and upperside of male. Philippines, Mindanao Is., Davao, Mt. Caragan.

21.**Cleora* **sp.? n. (Fig. 9)**

Material: 4♂ (GP3101♂). Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: Possibly a new species. Identity of the specimens are ongoing.

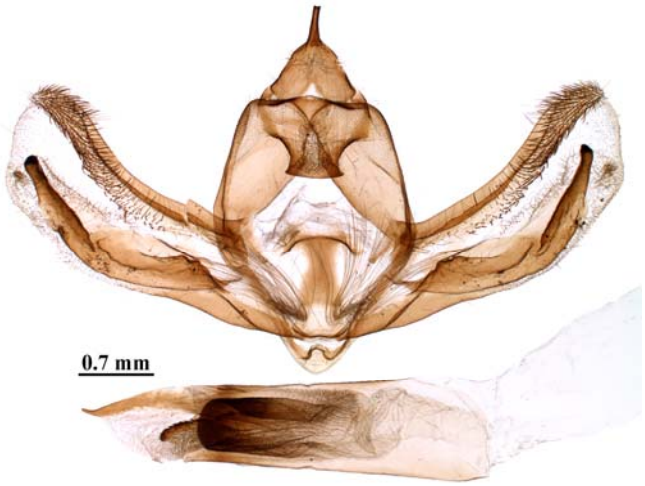


Fig. 9 – *Cleora* sp. ? Male genitalia (GP3101). Philippines, Mindanao Is., Davao, Mt. Caragan.

22.**Cleora injectaria* **(Walker,1860) (Figs 10, 11)**

Synonym(s): injectaria Walker,1860; compactaria Walker,[1863]; sublectaria Walker,[1863]; fuliginosa W.Warren,1894; vittata W.Warren,1899; dobboensis L.B.Prout,1929; anidryta L.B.Prout,1929

Original reference: *Boarmia injectaria* Walker,1860, List Spec. lepid. Insect Colln Br. Mus. 21: 376. Type ♀: "Ceylon" (BMNH).

Range (in code): **NC MY Pen LK FJ ID Mlc Aru Egg PG Ls TH Cbi Nst PH Neg Bal Mno Crg Pal Taw**

Material studied: 1♂ (GP2967♂). Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks**:** Despite some structural differences, the specimen is identified here as "*injectaria* Wlk" (cf. Holloway, [1994]). New to the fauna of Mindanao Island.

Figs 10, 11 – *Cleora injectaria*. Male genitalia, GP2967, and upperside of male. Philippines, Mindanao Is., Davao, Mt. Caragan.

23.**Cleora tella* **(West,1929) (Figs 12, 13)**

Synonym(s): tella West,1929

Original reference: *Boarmia tella* West,1929, Novit. zool. 35: 119-120. Holotype ♀ : Philippines, Luzon, Benguet, Baguio.

Range (in code): **PH Mno Crg Luz Pq Apo Dav Pal Neg Knl**

Material studied: 2♂1♀. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: These specimens belong to ssp. *mindana*. The illustrated male genitalia belongs to the nominate subspecies from Luzon (Pulaq) [Pq].

Figs. 12, 13 - *Cleora tella tella*. Upperside of male and male genitalia scaled, GP3099♂. Philippines, Luzon, Baguio.

24.**Dindica owadai* **Inoue,1990 (Figs 14, 15)**

Synonym(s): owadai Inoue,1990

Original reference: *Dindica owadai* Inoue,1990, Bull. Fac. dom. Sci. Otsuma Women's Univ. 26: 128-130, figs. 25, 28,33. Holotype ♂: Philippines, Luzon, Ifugao, Banaway (HI).

Range (in code): **PH Luz Ifg Mno Mtu Apo Dav Crg Neg Knl**

Material studied: 1♂1♀. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

25.*Gonodontis pallida* (Butler,1880)

Synonym(s): pallida Butler,1880

Original reference: *Orsonoba pallida* Butler,1880, Ann. Mag. nat. Hist. (5) 6 (32): 125. Type: "N.E.Himalayas (Lidderdale) (BMNH).

Range (in code): **IN TH VN TW ID Sum Clb PH Ley Blc Mno Crg CX**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: New species for the fauna of Mindanao Island.

Figs 14, 15 - *Dindica owadai. Male* genitalia scaled, GP.3091, and upperside of the male. Philippines, Negros Is., Kanlaon Mt.

26.*Ectropis* sp. (Figs 16, 17)

Range (in code): **PH Mno Crg**

Material studied: 2♂ (GP3106). Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: The male genitalia approaches to some degree to *Ectropis longiscapia* Prout (see Holloway). The identity of this species is ongoing.

27.*Fascellina* sp.

Range (in code): **PH Mno Crg**

Material studied: 2 ex. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: The identity of this species is still ongoing.

Figs. 16, 17 – *Ectropis* sp. Male genitalia and last abdominal segment (GP3106). and upperside of the male. Philippines, Mindanao Is., Davao, Caragan Mt.

28.*Hemithea* sp. (Figs 18, 19)

Range (in code): **PH Luz Mno Crg**

Material studied: 1♂ (GP3086). Philippines: Mindanao, Davao, Mt. Caragan 20-26.01.1998, local collector.

Remarks: We are of the opinion that this taxon belong to the genus *Hemithea* or allied genera, according to the shape of the male genitalia. Investigation on the identity of this species is ongoing.

Figs 18, 19 – *Hemithea* sp. Male genitalia scaled, GP3086, and the male: upperside (left), underside (right). Philippines, Mindanao Is., Davao, Caragan Mt.

29.*Hypochrosis hausmanni* Koçak & Kemal,2008 (Fig. 61)

Synonym(s): prouti West,1929 nec B.-B.,1915; hausmanni Koçak & Kemal,2008; westi Yazaki,2018

Original reference: *Hypochrosis hausmanni* Koçak & Kemal,2008, Misc. Pap. 138: 9 (nomen novum pro *prouti* West,1929 nec Bethune-Baker,1915).

Range (in code): **PH Luz Mno Crg**

Material studied: 6 ex: Philippines: Mindanao, Davao, Mt. Caragan 20-26.01.1998, local collector.

Remarks: The synonymy of *westi* Yazaki was proposed by the authors (Kemal & Koçak, 2019). New record for the fauna of Mindanao Island.

30.*Hypochrosis hyadaria* Guenée,[1858] (Fig. 62)

Synonym(s): hyadaria Guenée,[1858]; ignivorata Walker,[1863]; obliquaria Moore,1888

Original reference: *Hypochrosis hyadaria* Guenée,[1858], [in] Boisduval & Guenée, Hist. nat. Insects (Spec. gén. Lépid.) 10: 537.

Range (in code):**IN SI Djl MY Bor Sbh KBa ID Sum Ja Bli Flo Sbw Tim Clb TH PH Boh Mno Crg Mtu Pal Luz**

Material studied: 2♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: A variable species. Pagenstecher (1896) described *Hypochrosis annulata* from Celebes (Minahassa). This taxon was considered by Holloway ([1994]) as a subspecies of *Hypochrosis hyadaria* and found also in the Philippines. Yazaki (2018) synonimized *cadmica* Herbulot,1995 with *annulata* Pag.1896. Currently, ssp. *annulata* Pagenstecher is the representative of *hyadaria* in the Philippines and Sulawesi (Celebes).

31.*Hypochrosis* sp.

Material studied: 7♂♀. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: The identities of the specimens are still ongoing.

32.*Hypomecis philippinensis* Sato,1996

Synonym(s): philippinensis Sato,1996

Original reference: *Hypomecis philippinensis* Sato,1996, Tinea 14 (4): 256, figs. 1,2,6. Holotype ♂: Philippines: Leyte (NSMT).

Range (in code): **PH Ley Neg Mpl Knl Mno Crg**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record for the fauna of Mindanao Island.

33.*Hypomecis separata* (Walker,1860) (Figs 20, 21)

Synonym(s): separata Walker,1860; retractaria Walker,1860; intectaria Walker,1862
Original reference: *Boarmia separata* Walker,1860, List Specimens lepid. Insect Colln Br. Mus. 21: 381. Type ♂: "Hindostan".
Range (in code): **LK IN MY Bor Swk TH Ntt Hba Chy Nna Kao Cbi Phi Phu Nst Srt PH Mno Crg ID Sum**
Material studied: 1♂ (GP2971). Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Figs. 20, 21 – *Hypomecis separata*. Male genitalia (GP2971), and upperside of male. Philippines, Mindanao I., Davao, Caragan Mt.

34.*Iridoplecta ferrifera* (Moore,1888) (Fig. 63)

Synonym(s): ferrifera Moore,1888
Original reference: *Trygodes ferrifera* Moore,1888, Descr. new Indian lepid. Insects Colln Atkinson (3): 255, pl.viii fig.17. Type ♀: "Darjiling".
Range (in code):**IN SI Djl TH CMa VN ID Sum Ja Bli MY Bor Sbh KBa PH Mno Crg**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New to the fauna of the Philippines.

35.*Iulotrichia muhabbet* Koçak,2006 (Fig. 22)

Synonym(s): decursaria Walker,1860 nec Wlk.,1860; muhabbet Koçak,2006
Original reference: *Iulotrichia muhabbet* Koçak,2006, Misc. Pap. 102/103: 15 (nomen novum pro *decursaria* Walker,1860: 384 nec Wlk.,1860: 351).
Range (in code): **MY Bor Swk TH Ntt Hba PH Mno Crg**
Material studied: 1♂ (GP3102). Barcoded by the Cesa (Lep-Geo017). Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: For the validity of the species name see: Koçak in Koçak & Kemal(2006). The genital morphology support the identity of this species. Consequently, it is new to the fauna of the Philippines (*cf.* Holloway,[1994]).

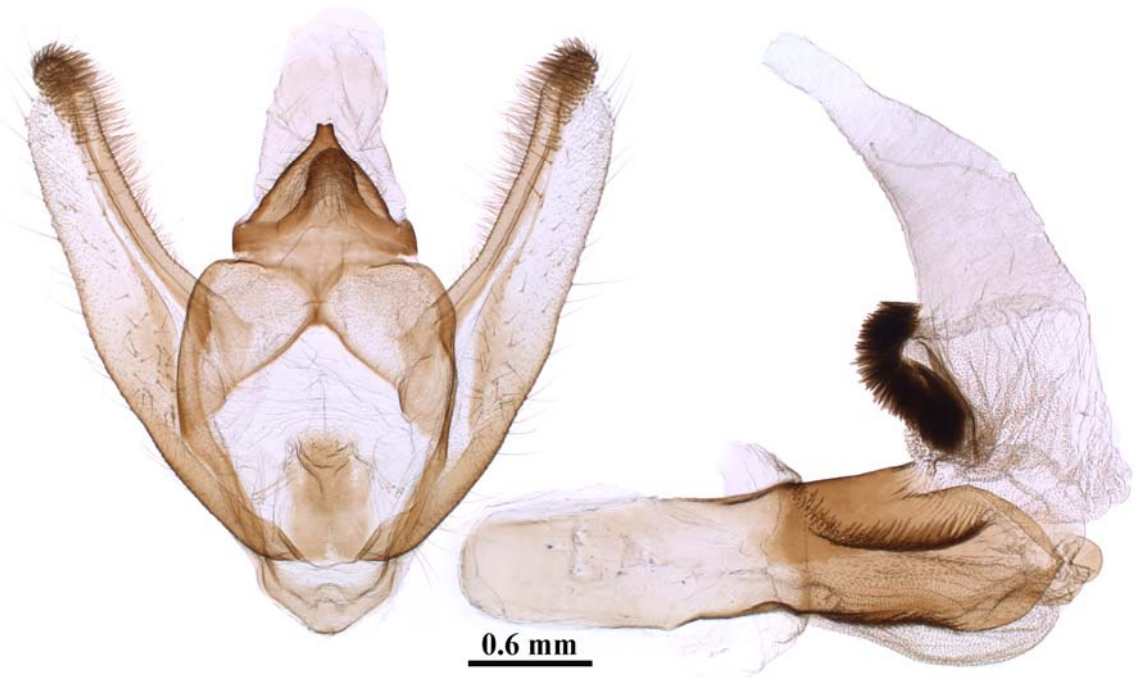


Fig. 22 - *Iulotrichia muhabbet*. Male genitalia (GP3102). and upperside of the male. Philippines, Mindanao Is., Davao, Caragan Mt.

36.*Krananda semihyalina* Moore,[1868]

Synonym(s): semihyalina Moore,[1868]; vitraria R.Felder & Rogenhofer,1875

Original reference: *Krananda semihyalina* Moore,[1868], Proc. zool. Soc. London 1867: 648. Syntypes ♂♀ : [India]: "Bengal (in coll. A.E.Russell)".

Range (in code): **IN ID Ja Mlc JP MY Bor TH PH Ley Blc Mno Crg**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: New record for the fauna of Mindanao Island.

37.*Lassaba acribomena* (L.B.Prout,1928) (Figs 23, 24)

Synonym(s): acribomena L.B.Prout,1928

Original reference: *Medasina acribomena* L.B.Prout,1928, Bull. Hill. Mus. 2: 156-157. Syntypes: [Indonesia]: Sumatra (various localities).

Range (in code): **ID Sum MY Prk Bor Sbh PH Luz Pq Mno Bkd Ktd Crg**

Material studied**:** 14♂ (GP3103♂) (Barcoded by the Cesa, Lep-Geo019). Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector. Further material: 2♂1♀. Luzon Island, Mt. Pulaq 1500m, 10.i.1999, F.Mamigo leg. 1♂. Mindanao Island, Bukidnon, Mt. Kitanglad, 22.07.1998, local collector.

Remarks: This species was previously mentioned from the Philippines with doubt in various scientific media. The present records reveal that the species is distributed from Luzon to Mindanao. On the other hand, the male genitalia shows some minor discrepancy from the Bornean specimen (cf. Holloway). However, between *Lassaba acribomena* populations from Indonesia (Sumatra), Malaysia (Perak, Borneo) and the Philippines (Mindanao, Mt. Caragan) corrected pairwise genetic distances ranged from 0.15 % to 0.92 %.

Figs. 23, 24 - *Lassaba acribomena*. Scaled male genitalia (GP3103). and upperside of the male. Philippines, Mindanao Is., Davao, Caragan Mt.

38.*Ourapteryx fulvinervis* (W.Warren,1894)

Synonym(s): fulvinervis W.Warren,1894

Original reference: *Urapteryx fulvinervis* W.Warren,1894, Novit. zool. 1 (2): 399. Type ♂: [Indonesia]: "Padang".

Range (in code): **ID Sum TH Nan Rng PH Mno Bkd Crg**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

39.*Pingasa* sp.1

Range (in code): **PH Mno Crg**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

40.*Pingasa* sp.2

Range (in code): **PH Mno Crg**

Material studied: 7♂♀. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: *Pingasa* species are widely distributed over all the Philippines. There is no revisional work published; therefore the identity of its species is not easy both from morphological and molecular standpoints. The process is still ongoing.

41.*Probithia exclusa* (Walker,1860)

Synonym(s): exclusa Walker,1860; praetereuns Walker,1860; lignaria Walker,1866; frenata R.Felder & Rogenhofer,[1875]

Original reference: *Hemerophila ? exclusa* Walker,1860, List Specimens lepid. Insects Colln Br. Mus. 21: 320. Type ♂: "Hindostan".

Range (in code): **PH Mno Crg TH Ntt Hba ID Mlc Ja Clb LK IN**

Remarks: New record for the fauna of Mindanao Island.

42.*Problepsis apollinaria* (Guenée,[1858])

Synonym(s): apollinaria Guenée,[1858]; hemicyclata W.Warren,1897; candidior L.B.Prout,1917; deparcata L.B.Prout,1925; wilemani West,1930; aphylacta L.B.Prout,1938

Original reference: *Argyris apollinaria* Guenée,[1858], Hist. nat. Insectes, Spec. Gen. Lep. 10: 13, 555 (index). Type ♂: "Borneo", "coll. Gn."

Range (in code): **MY Bor Swk PG Bsm IN ID Kai PH Luz Mno Crg Neg Mpl TH AU**

Material studied: 2♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: New record for the fauna of Mindanao Island.

43.*Tasta* sp.

Range (in code): **PH Mno Crg**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: Some populations of this species from Philippines (Mindanao, Negros, Luzon etc.) have not been identified yet. Detailed taxonomical and molecular investigations are necessary (see also Kemal *et al.,* 2018).

44.*Traminda aventiaria* (Guenée,[1858])

Synonym(s): aventiaria Guenée,[1858]; molybdias Meyrick,1889.

Original reference: *Timandra aventiaria* Guenée,[1858], Hist. nat. Insectes, Spec. Gen. Lep. 10: 3.

Range (in code): **IN LK MM MY ID Sum TH CMa CDo CD2 VN Bor PG PMo AU QAu GU PH Neg Knl Pal Ley Blc Mno Crg**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: New record for the fauna of Mindanao Island.

45.*Xandrames latiferaria* (Walker,1860)

Synonym(s): latiferaria Walker,1860; curvistriga W.Warren,1894; cnecozona L.B.Prout,1926; mulsa L.B.Prout,1935; recondita Inoue,1982

Original reference: *Pachyodes ? latiferaria* Walker,1860, List Spec. lepid. Insects Colln Brit. Mus. 21: 445-446. Type: North China.

Range (in code): **MY Bor Sbh KBa TH Nna Kao Chy IN Ass Meg Khs ID Ja JP PH Crg Mno Neg Mpl**

Remarks: Previously reported by Kemal *et al.* (2018) from Caragan.

46.*Xerodes ypsaria* Guenée,[1858]

Synonym(s): ypsaria Guenée,[1858]; testacearia Moore,1868

Original reference: *Xerodes ypsaria* Guenée,[1858], [in] Boisduval & Guenée, Hist. nat. Insectes, Spec. Gen. Lep. 9: 291. Type ♂: "Borneo".

Range (in code): **IN SI Djl MY Bor ID Clb TH CMa PH Mno Bkd Crg Ley Blc**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

47.*Zythos* sp.

Range (in code): **PH Ley Blc Mno Crg**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: For the identities of the specimens from Mt. Caragan (Mindanao) and Mt. Balacaue (Leyte) are ongoing.

Lasiocampidae

48.*Gastropacha (Estigena) philippinensis* Tams,1935 (Fig. 64)

Synonym(s): philippinensis Tams,1935

Original reference: *Gastropacha pardale philippinensis* Tams,1935, Mem. Mus. R. Hist. nat. Belgique 4 (12): 51, pl.3 fig.9. Holotype ♂: Philippines, Luzon, Benguet, Palali (BMNH).

Range (in code): **PH Luz Ifg Ley Mdo Hlc Neg Knl Mno Bkd Crg Mar IN NP CN Yu TH CMa Php MAl Fn Ctg Int Nan Pua VN Ton Fan MM Bor ID Sum Adm**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

49.*Kunugia dendrolimoides* Zolotuhin, Treadaway & Witt,1998

Synonym(s): dendrolimoides Zolotuhin, Treadaway & Witt,1998

Original reference: *Kunugia dendrolimoides* Zolotuhin, Treadaway & Witt,1998, Nachr. ent. Ver. Apollo (Suppl.) 17: 185, figs. Holotype ♂: Philippines: C-Leyte, Hilusig, Mt. Balocaue 600m, CCGT.

Range (in code): **PH Ley Blc Hls Luz Sam Mno Busa Crg**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Limacodidae

50.*Cania (Paracania) lourensi* Solovyev,2014

Synonym(s): lourensi Solovyev,2014

Original reference: *Cania (Paracania) lourensi* Solovyev,2014, Ent. rev. 94 (5): 709, figs. Holotype ♂: Philippines, E.Luzon, Sierra Madre Mingan Mts., Lourens leg. (MWM).

Range (in code): **PH Luz Neg Pan Mno Crg**

Material studied: 2♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: New to the fauna of Mindanao Island.

Lymantriidae

51.*Aroa* sp.

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: Identification process is still ongoing.

52."*Artaxa*" ?sp. (Figs 25, 26)

Range (in code): **PH Mno Dav Crg**

Material studied: 1♂ (GP3079). Barcoded by the Cesa (Lep-Lym001). Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: Identification process is still ongoing.

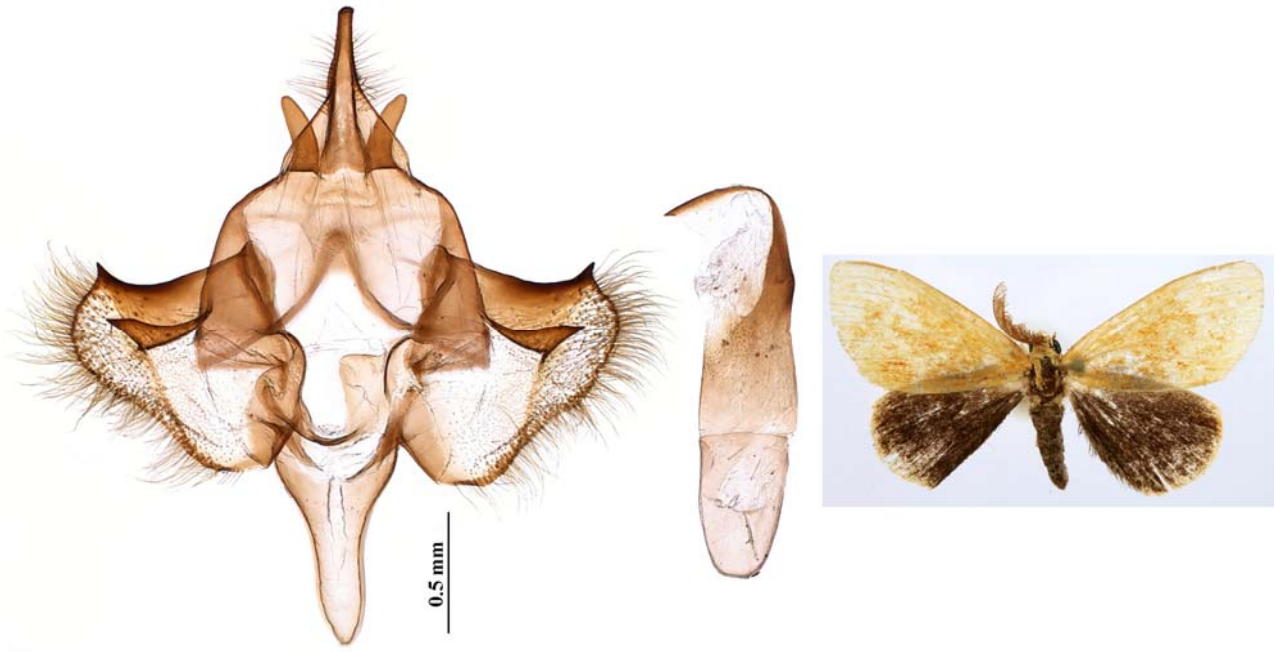
53.*Calliteara horsfieldii* (Saunders,1851) (Fig. 65)

Synonym(s): horsfieldii Saunders,1851; arga Moore,1859; longipennis Walker,1862; nilgirica Hampson,1891; farenoides Lucas,1892; horsfieldi Strand,1915

Original reference: *Arctia horsfieldii* Saunders,1851, Trans. ent. Soc. London 1851: 162, pl.12 figs.1,2.

Range (in code): **IN LK Pdy Kndy MY SG Bor Swk ID Ja AU QAu VN Ton Han TH CMa Cuo Cuo1 Bnk CRa Chy Phe Nkh PH Mno Crg**

Material studied: 3♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.



Figs 25, 26 - "*Artaxa*" ?sp. Male genitalia scaled, GP3079, and upperside of the male. Philippines, Mindanao Is., Davao, Caragan Mt.

54.*Euproctis nigrofasciata* Semper,1898 (Figs 27, 28)

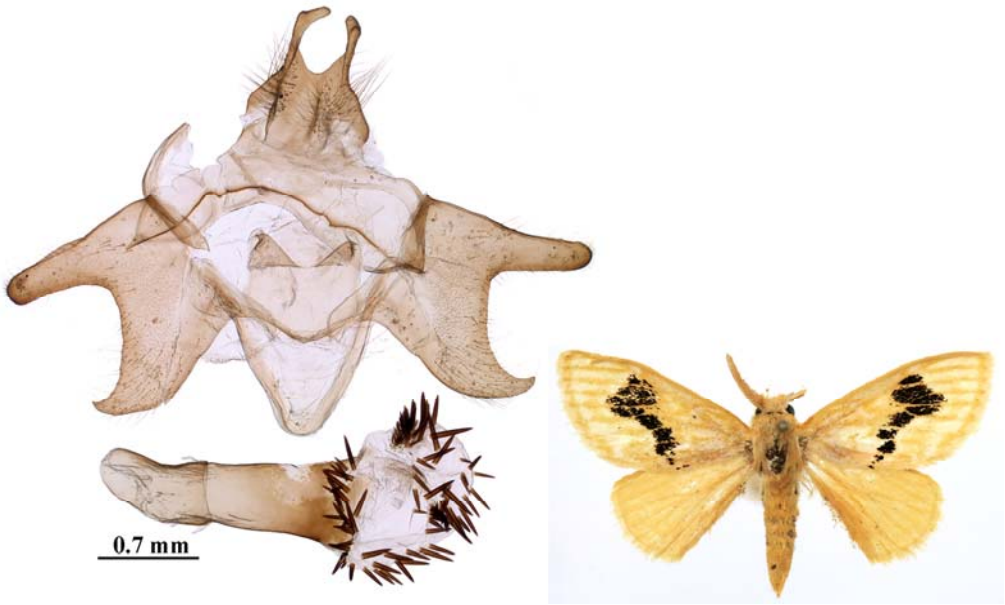
Synonym(s): nigrofasciata Semper,1898

Original reference: *Euproctis nigrofasciata* Semper,1898, Reisen Archipel. Philipp. 2: 467. Type 1♂: Philippines, SW Mindanao, Pulobatu.

Range (in code): **PH Mno Dav Crg**

Material studied: 1♂ (GP3083). Philippines, Mindanao I., Mt. Caragan, 20-26.01.1998, local collector.

Remarks: New to the fauna of Mindanao Island. For molecular comments, see below.



Figs 27, 28 - *Euproctis nigrofasciata*. Male genitalia scaled (GP3083), and upperside of the male. Philippines, Mindanao Is., Davao, Caragan Mt.

55.*"Euproctis"* sp.1 (Figs 29, 30)

Material studied: 1♂ (GP3073). Philippines, Mindanao I., Mt. Caragan, 20-26.01.1998, local collector.

Figs 29, 30 - *"Euproctis"* sp.1 – Male genitalia scaled, GP3073, and upperside of male. Philippines, Mindanao, Mt. Caragan.

56.*"Euproctis"* sp.2 (Figs 31, 32)

Material studied: 1♂ (GP3074). Philippines, Mindanao I., Mt. Caragan, 20-26.01.1998, local collector.

Figs 31, 32 - *"Euproctis"* sp.2 – Male genitalia scaled, GP3074, and upperside of male. Philippines, Mindanao, Davao, Mt. Caragan.

57.*"Euproctis"* sp.3 (Figs 33, 34)

Material studied: 1♂ (GP3080). Barcoded by the Cesa (Lep-Lym002). Philippines, Mindanao I., Mt. Caragan, 20-26.01.1998, local collector.

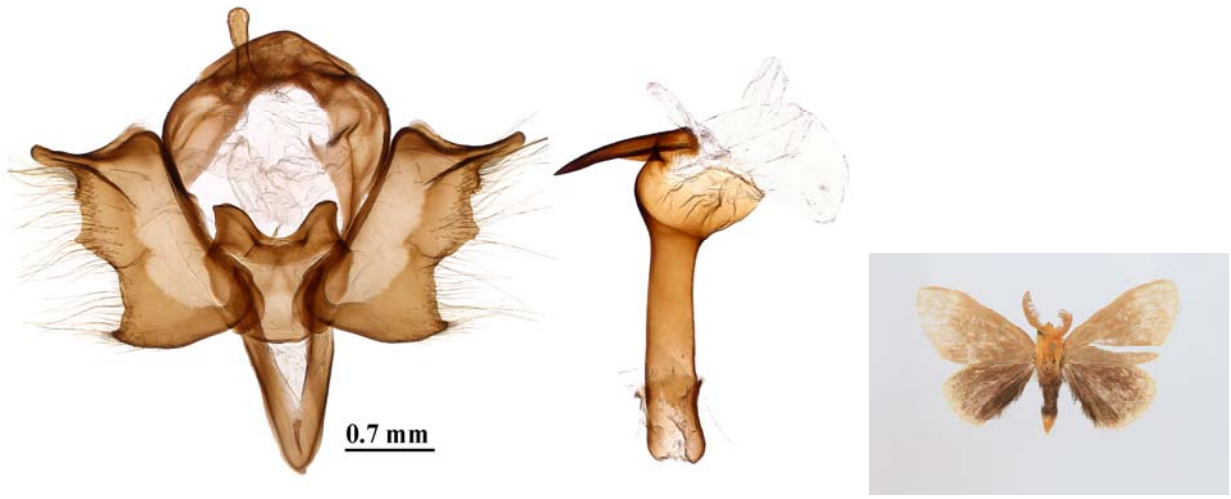
Remarks: For molecular comments, see below.

Figs 33, 34 - "*Euproctis*" sp.3 – Male genitalia scaled, GP3080, and upperside of male. Philippines, Mindanao, Davao, Mt. Caragan.

58.*"Euproctis"* sp.4 (Figs 35, 36)

Material studied: 1♂ (GP3082). Barcoded by the Cesa (Lep-Lym004). Philippines, Mindanao I., Mt. Caragan, 20-26.01.1998, local collector.

Remarks: Investigations on the "*Euproctis*" species of the Philippines are ongoing. Unfortunately, for reliable morphological comparison and mtCOI in the publications and the GenBank, respectively, are insufficient. For the *Nygmiini* of the local fauna in China Wang's (2011) paper, and "molecular phylogeny of Lymantriinae" are the unique, primary attempt but far from being useful for our purpose (Wang, et al., 2015).



Figs 35, 36 - "*Euproctis*" sp.4 – Male genitalia scaled, GP3082, and upperside of male. Philippines, Mindanao, Davao, Mt. Caragan.

Chaos in the Phylogeny of the Genus *Euproctis*

In the presented study notshown phylogenetic tree [4] has indicated that also "traditional" *Euproctis* belong to taxonomically difficult assemblage. Phylogenetic relationships among species of this genus are the worst resolved part of the lepidopteran tree of life, having short internodes and many poorly statistically supported deeper nodes. This indicates that mtCOI gene per se is very likely insufficient to resolve the deep Heterocera phylogeny. Possibly, further loci can help to improve resolution within the *Euproctis* lineages. But another different molecular marker (COI, mt16S rRNA, EF-1 α, CAD, RpS5, MDH, GAPDH, GAPDH) did not bring distinctly better-supported *Nygmiini* phylogenies (Wang et al, 2015).

A promising solution to unravel the evolutionary history of the *Euproctis* could be the synergistic effect of increased molecular and morphological datasets from different geographical locations.

Congruence among many morphological and molecular characters implies a robust inference of phylogeny, whereas extensive conflict suggests that the phylogenetic history is not being faithfully recovered and that reassessment of the characters is necessary. In the notpresented phylogenetic tree, seen the diagnostic characters that identify the species in genus *Euproctis* cannot determine the boundaries of species.

In the phylogenetic tree, many *Euproctis* species are close to different taxa rather than with congeners, so *Euproctis* is a paraphyletic group. In this study, *Euproctis* sp3 is sister position with *E. vitellina*, morphologically not supported by synapomorphies. The same contradiction is also available between *Euproctis* sp1 and *E. nigrofasciata*. The genetic distance between *Euproctis* sp3 and *E. vitellina* is 2.34%, and the genetic distance between "*Artaxa*"?sp. and *Euproctis nigrofasciata* is 2.10%. These two populations appear to be distinct species, because they have greater genetic distances than the threshold of 2.00%. Likewise, the genetic distance between mtCOI sequence of the *Somena scintillans* population presented in this study with and the mtCO sequences of another population of this species obtained from the Boldsystems was 0.90%. In the phylogenetic analysis conducted in this study, mtCOI (658bp) molecular barcodes of *E. nigrofasciata* and *E. vitellina* species first time were obtained and the *Euproctis* sp4 population appeared to be distinct species.

In this study the mtCOI sequence of the morphologically defined *Nygmia javana* population has the genetic distance 1.83% between with the mtCOI sequence of *Nygmia javana* (KP081912) obtained from Genbank.

This work clearly illustrates that the more effort we put into comprehending the genetic diversity of *Euproctis*, the more taxonomic pitfalls we find. Our results suggest the existence of a considerable number of errors in the diagnoses species of genus. At the same time, our results present a realistic picture of the state of the systematics of Heterocera.

In the study about *Euproctis* groups has made by Wang *et al* (2015), *Euproctis* remains extremely polyphyletic, and is in great need of a comprehensive revision many of the same problems relating to species boundaries and diagnostic characters. Thus supporting the assertion that the taxonomic problems highlighted here are likely to be persistent throughout Heterocera,

[4] In this study notshown the neighbour joining tree was constructed in the MEGA6 program. References are given below:

Kimura M., 1980. A simple method for estimating evolutionary rate of base substitutions through comparative studies of nucleotide sequences. *Journal of Molecular Evolution* 16: 111-120.

Tamura K., Stecher G., Peterson D., Filipski A. & S. Kumar, 2013. MEGA6: Molecular Evolutionary Genetics Analysis version 6.0. *Molecular Biology and Evolution* 30: 2725-2729.

and perhaps for Lepidoptera as a whole. At the *Euproctis* species, we uncovered inconsistencies in classification that are relatively easily addressed. The difficulty in dealing with *Euproctis* genera increases, as the majority of those species represented were not monophyletic.

Our results suggest that around half of the species richness of the genus is not formally recognized. This is because corresponds to discernible morphotypes that are as yet undescribed, and even cryptic species. The cryptic diversity or the revision of genus corresponds to presently synonymized/unused species names with nomenclatural priority, which will complicate future taxonomic work.

Additionally, further sampling from different geographically regions, will likely uncover a higher proportion of undescribed taxa. The assessment and formal description of the real species diversity of the *Euproctis* as a whole, will take a significant, and probably incalculable, amount of time and multidisciplinary efforts.

It is frequently a great challenge to distinguish between intra and inter-specific boundaries, because morphological convergence and plasticity blur our ability to perceive many taxonomic relationships. Our molecular work shows that many frequently employed characters/conditions are not particularly reliable for diagnosing a number of species. To resolve Lepidopteran systematics, traditionally sampling efforts and after that sequencing of DNA markers of taxa and populations represented are essential. In conjunction with molecular data, morphologic characters need to be re-inspected and contrasted with signal from molecular analyses in order to reform taxonomy and rewrite diagnoses. Nomination of topotypes directly associated with genetic data in situations of degraded or lost type specimens, is highly advisable in order to facilitate clarification of the taxonomy of these diverse, commonly encountered, ecologically important, and morphologically complex organisms.

Among the *Lymantria* specimens from Caragan Mt., there are still several unidentified species. The faunistic records of the following five species are based upon the information by Schintlmeister (2004).

59.*Lymantria (Collentria) cryptocloea* Collenette,1932

Synonym(s): cryptocloea Collenette,1932; #cryptochloea Schintlmeister,2004

Original reference: *Lymantria cryptocloea* Collenette,1932, Novit. zool. 37: 178, pl.1 fig.6. Holotype ♂: Philippines, Mindanao, Lanao, Kolambugan (BMNH).

Range (in code): **PH Luz Ifg Mdo Hlc Sam Mno Apo ?Crg Neg Knl Ley Blc**

Material studied: 1♂. Philippines, Mindanao I., Mt. Caragan, 20-26.01.1998, local collector.

This record is given here temporarily.

60.*Lymantria (Nyctria) naessigi* Schintlmeister,2004 (Fig. 37)

Synonym(s): naessigi Schintlmeister,2004

Original reference: *Lymantria (Nyctria) naessigi* Schintlmeister,2004, Quadrifina 7: 134, figs. Holotype ♂: Philippines, Mindanao Cotabato, Mt. Busa (coll. Schintlmeister).

Range (in code): **PH Mno Busa Crg Sam Neg Knl Ley Blc Luz Pan Bly Mdo Hlc**

Material studied: 1♂ (GP3077). Philippines, Mindanao I., Mt. Caragan, 20-26.01.1998, local collector.

Fig. 37 - *Lymantria (Nyctria) naessigi*. Male genitalia, GP3077. Philippines, Mindanao, Davao, Mt. Caragan.

61.*Lymantria (Porthetria) bivittata* (Moore,1879)

Synonym(s): bivittata Moore,1879
Original reference: *Pegella bivittata* Moore,1879, [in] Hewitson & Moore, Descr. new Indian lepid. Insects Colln late Mr W.S. Atkinson (1): 57. Type ♀ : "Darjiling".
Range (in code): **SI Djl BD Syl IN TH CMa CDo PH Pan Bly Mno Bkd Ktd Crg Busa Mtu Mdo Hlc Neg Knl Pal**
This record is based upon the information by Schintlmeister (2004).

62.*Lymantria (Sarantria) karsholti* Schintlmeister,2004

Synonym(s): karsholti Schintlmeister,2004
Original reference: *Lymantria (Sarantria) karsholti* Schintlmeister,2004, Quadrifina 7: 208, figs.
Holotype ♂: Philippines, Luzon, Ifugao Prov., Banaue 1200m (coll. Schintlmeister).
Range (in code): **PH Luz Ifg Neg Knl Mno Bkd Ktd Busa Bnn Apo Crg Mdo Hlc Ley Blc**
This record is based upon the information by Schintlmeister (2004).

63.*Lymantria (Spinotria) eckweileri* Schintlmeister,2004

Synonym(s): eckweileri Schintlmeister,2004
Original reference: *Lymantria (Spinotria) eckweileri* Schintlmeister,2004, Quadrifina 7: 152, figs.
Holotype ♂: Philippines, Mindanao, Prov. Davao del Sur, Mt. Apo (coll. Schintlmeister).
Range (in code): **PH Mno Bkd Ktd Apo Bnn Crg Dav**
This record is based upon the information by Schintlmeister (2004).

64.*Lymantria (Spinotria) rhabdota* Collenette,1949

Synonym(s): rhabdota Collenette,1949
Original reference: *Lymantria rhabdota* Collenette,1949, Ann. Mag. nat. Hist. (12) 1: 728.
Range (in code): **ID Sum Ja MY Bor PH Pal Mno Bkd Ktd Busa Crg Neg Knl**
This record is based upon the information by Schintlmeister (2004).

65.**Lymantria (Spinotria)* sp. (Fig. 38)

Material studied: 1♂ (GP3075). Philippines, Mindanao, Davao, Mt. Caragan, 20-26.i.1998, local collector (Cesa).
Remarks: Schintlmeister (2004) in his taxonomic study revised all the *Lymantria* species in the Old World. He classified the genus into several subgenera. We followed in the present paper his generic division. The present species belongs to the subgenus *Spinotria* due to especially the shape of the bilobed valva. However, it differs apparently from all known species. The identity of this species is still ongoing.

66.*Lymantria (s.str.) semperi* Schintlmeister,2004

Synonym(s): semperi Schintlmeister,2004

Original reference: *Lymantria (Lymantria) semperi* Schintlmeister,2004, Quadrifina 7: 92-93, figs. Holotype ♂: Philippines, Mindoro Isl. Mt. Halcon 1000m iv.2001 (coll. Schintlmeister, Dresden).

Range (in code): **PH Mdo Hlc Pal Luz Ifg Pan Bly Ley Blc Neg Knl Mno Busa Ktg Crg**

This record is based upon the information by Schintlmeister (2004).

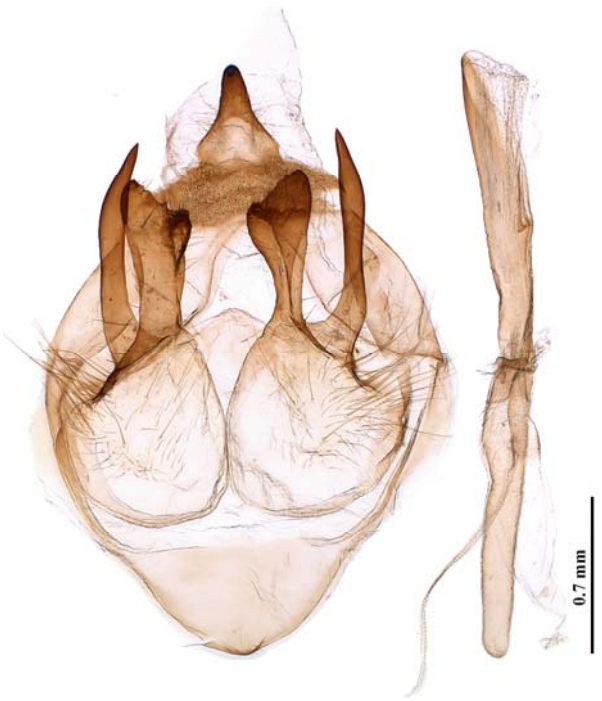


Fig. 38 - *Lymantria (Spinotria)* sp. Male genitalia scaled, GP3075. Philippines, Mindanao, Davao, Mt. Caragan.

67.*Nygmia javana* (Aurivillius,1894) (Figs 39, 40)

Synonym(s): javana Aurivillius,1894

Original reference: *Euproctis varia* var. *javana* Aurivillius,1894, Ent. Tidskr. 15: 174. Syntypes 6♂ 2♀ : [Indonesia]: "Java".

Range (in code): **ID Ja MY PH Mno Crg**

Material studied: 1♂ (GP3081). Barcoded by the Cesa (Lep-Lym003). Philippines, Mindanao I., Mt. Caragan, 20-26.01.1998, local collector.

Remarks: The specific identity is also confirmed by the molecular analysis (see above). New to the fauna of the Philippines.

68.*Olene mendosa* Hübner,[1823] (Fig. 66)

Synonym(s): mendosa Hübner,[1823]; basalis Walker,1855; lanceolata Walker,1855; fusiformis Walker,1855; sawanta Moore,1859; basigera Walker,1865; distinguenda Walker,1865; divisa Walker,1865; basivitta Walker,1869; invasa Walker,1869; tarowanensis Matsumura,1927

Original reference: *Olene mendosa* Hübner,[1823], Samml. exot. Schmett. Zutr. 2: 19, nr.147, figs. 293-294.

Range (in code): **LK Kndy Dck Pdy Cob IN BD Syl ID Ja CN TW AU PG VN Ton Tda TH Bnk CMa Cuo Cuo5 CDo CD2 CRa Loe Knc Cbi MY Bor PH Mno Crg**

Material studied: 3♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: New to the fauna of Mindanao Island.

Figs 39, 40 – *Nygmia javana*. Male genitalia, GP3081, and upperside of the male. Philippines, Mindanao Is., Davao, Caragan Mt.

Noctuidae

69.*Acidon ? semiochrea* Holloway,2008 (Figs 41, 43)

Synonym(s): semiochrea Holloway,2008

Range (in code): **MY Bor Swk Sbh TH CMa ?PH ?Mno ?Crg**

Material studied**:** 1 ♀ (?*semiochrea*): Mindanao, Mt. Caragan, 20-26.01.1998, local collector. 1 ex (*Sympis rufibasis*): Leyte, Mahaplag, Mt. Balacaue 600m, 18-26.vi.2018, leg. R. Cabale (Cesa) [New record for Leyte Island].

Remarks: Although the single specimen from Caragan was worn, its wing markings and colouration are similar to those of *semiochrea* (Hypeninae). However, its size is almost the same with *Sympis rufibasis* (Catocalinae) (forewing 19mm, wingspan 37mm) **(Figs. 42, 44)**. Wing markings and colouration may cause these two species to be confused erroneously. However, shapes of labial palpi of these two species are quiet different. The identity of this species in Caragan is still ongoing.

70.*Aedia acronyctoides* (Guenée,1852)

Synonym(s): acronyctoides Guenée,1852

Range (in code): **WS AU FJ IN Mh Nsk TH Knc CMa Int Lmp Nan Rng LA KH VN MM NP TW PH Boh Ceb Luz Mdo Neg Mpl Pal Mno Crg ID Sum Tim Flo Sbw Clb PG MY Bor Swk Sbh**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: Blackish marginal band on hindwing almost straight.

71.*Aedia* sp.

Material studied: 2♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: Blackish marginal band on hindwing round.

Figs 41, 42 – Lateral view of head. *Acidon ? semiochrea* (Hypeninae) from Mindanao: Caragan Mt. (Left). *Sympis rufibasis* (Catocalinae) from Leyte: Balacaue Mt. (right).

Figs 43, 44 – Dorsal view of the moths. *Acidon ? semiochrea* (Hypeninae) from Mindanao: Davao, Caragan Mt. (Left). *Sympis rufibasis* (Catocalinae) from Leyte: Balacaue Mt. (right).

72.*Anomis lyona* (Swinhoe,1919) (Figs 45, 46)

Synonym(s): lyona Swinhoe,1919

Original reference: *Cosmophila lyona* Swinhoe,1919, Ann. Mag. nat. Hist. (9) 3: 312. Syntypes ♂♀ : [Indonesia]: "Padang, W.Sumatra".

Range (in code): **ID Mlc Clb Sum PG AU QAu NC NF Oki WS FJ TW PH Mno Crg TH Nrt Kao MY MM PK Pj Iab IN**

Material studied: 1♀ (GP3076). Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: New record for the fauna of Mindanao Island.

73.*Anomis* sp.

Range (in code): **PH Mno Crg**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

74.*Aroana* sp.

Range (in code): **PH Mno Crg**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

75.*Atacira* sp.

Range (in code): **PH Mno Crg**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Figs 45, 46 – *Anomis lyona*. Female genitalia scaled, GP3076, and upperside of the female. Philippines, Mindanao, Davao, Mt. Caragan.

76.****Athetis ? maculatra* (Lower,1902)**

Synonym(s): maculatra Lower,1902

Original reference: *Caradrina maculatra* Lower,1902, Proc. Linn. Soc. New South Wales 26: 651-652. Syntypes 3 ex: Queensland, Brisbane and Mackay.

Range (in code): **AU QAu Bri PH? Mno? Crg?**

Material: 1ex. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

77.*Avatha bubo* (Geyer,1832) (Fig. 67)

Synonym(s): bubo Geyer,1832 nec Fabr.,1775; perficiens Walker,1858; condita Walker,1858; leksawasdi Koçak & Kemal,2006

Original reference: *Athyrma bubo* Geyer,1832, [in] Hübner,J., Zutr. Samml. exot. Schmett. 4: 13. Type(s): [Indonesia]: Java.

Range (in code): **ID Ja Sum Bor Clb Ij PG CN LK IN VN KH TH CMa Int Knc Cbi Ray SG PH Mno Crg**

Material studied: 1♀. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: New record for the fauna of Mindanao Island.

78.****Axylia* sp.**

Range (in code): **PH Mno Crg**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: Two specific names are under discussion here. [1] *Phalaena putris* Linnaeus,1761 was described from [Sweden] and the type-species of the genus *Axylia* Hübner,[1821]. [2] *Axylia triseriata* Moore,1888 was described from India (Kangra). There are various opinions about these two names. For example, Kononenko & Pinratana (2013: 385) consider *triseriata* Moore as a valid

name of a species from India to Taiwan. Holloway[5] discussed the status of Indo-Australian *Axylia* species as follows;

> "*Axylia* Hübner includes two species very similar in external appearance to the Palaearctic type species, *putris* Linnaeus, namely *triseriata* Moore (India, Java), the closely related or conspecific *mundipennis* Warren (Luzon) and a further taxon (slide 12957) in Sulawesi".

In some webpages, the name *triseriata* Moore is considered as a synonym of *Axylia putris* Linnaeus [6], or subspecies of *Axylia putris* Linnaeus [7].

There is no serious differences in the genitalia or external morphology between *putris* and *triseriata*. However, a DNA analysis between them has not been published so far. Specimens from Europe, Turkey, Pakistan, and Mindanao (Philippines) will be examined by us for this purpose.

Present record of this genus is new for Mindanao Island.

79.*Baorisa philippina* Behounek, Speidel & Thöny,1996

Synonym(s): philippina Behounek, Speidel & Thöny,1996

Original reference: *Baorisa philippina* Behounek, Speidel & Thöny,1996, Esperiana 4: 56, figs. Holotype ♂: Philippinen, Mindanao, S-Mt. Kitanglad, 1700m, 15.8-15.9.1993, leg. Sinev (coll. Speidel).

Range (in code): **PH Mno Bkd Ktd Apo Crg Neg Knl Ley Blc Luz Ifg**

Material studied: 2♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

80.*Bastilla joviana (*Stoll,1782) (Fig. 68)

Synonym(s): sinuata Fabricius,1781 nec Fabr.,1775; joviana Stoll,1782; jovis Hübner,[1823]

Original reference: Phalaena joviana Stoll,1782, [in] Cramer, Uitl. Kapellen: 237.

Range (in code): **IN TH CMa Int Knc LA VN NP LK Tcm Dck Kndy CN TW JP PH Boh Mno Crg ID Ja Sum Bor Tim Flo Sbw Clb Mlc PG Goo FJ AU Qau**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: Recently this species was reported and illustrated by the authors from Bohol Island(Kemal *et al.,* 2019). The present identification is based upon the external morphology. The genital morphology of the specimens collected have not been examined.

81.*Belciana hemodoides* Holloway,2009 (Fig. 69)

Synonym(s): hemodoides Holloway,2009

Range (in code): **MY Bor BN TH Tng CMa Dst Ds10 Nrt Cph SG ID PH Ley Luz Mdo Sam ?Mno ?Crg**

Material studied: 5♂♀. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: This record is new for the fauna of Mindanao Island (Behounek *et al.,* 2015: 346)

82.*Buzara onelia* (Guenée,1852)

Synonym(s): onelia Guenée,1852; luteipalpis Walker,1865

Original reference: *Naxia onelia* Guenée,1852, Hist. nat. Insectes, Spec. gén. Lépid. 7: 256.

Range (in code): **LK IN NP TH Tng Nan Dpk MY Bor ID Sum PH Mno Crg**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: New record for the fauna of Mindanao Island.

83.*Callopistria maillardi* (Guenée,1862)

Synonym(s): maillardi Guenée,1862; recurvata Moore,1882; nauticorum Tams,1935; pseudintermissa Viette,1965.

Range (in code): **SL ZR Sk MU YE PK IN SI Pj Djl Clc LK TH Bnk CMa Lmp Nan NP VN TW PH Luz Mno Crg CN PG WS ID Ja NH AU QAu Hw NC ZA Nta Kzu Uma ZW FJ RA RE NZ**

Material studied: 3♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: New record for the fauna of Mindanao Island.

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[5] http://www.mothsofborneo.com/part-12/noctuinae/noctuinae.php
[6] http://www.nic.funet.fi/pub/sci/bio/life/insecta/lepidoptera/ditrysia/noctuoidea/noctuidae/noctuinae/axylia/index.html#putris
http://www.lepiforum.de/lepiwiki.pl?Axylia_Putris
[7] https://commons.wikimedia.org/wiki/File:Axylia_putris_triseriata_(29995371498).jpg

84.*Callopistria trilineata* (Walker,1862)

Synonym(s): trilineata Walker,1862; duplicilinea Walker,1864

Original reference: *Agabra trilineata* Walker,1862, J. Linn. Soc. Lond. (Zool.) 6: 137. Type: Sarawak.

Range (in code): **SG Bor Swk MY PH Mno Crg Boh ID Clb PG**

Remarks: Previously reported by Kemal *et al.* (2018) from Caragan.

85.*Callyna semivitta* Moore,1882

Synonym(s): semivitta Moore,1882

Range (in code): **IN SI Djl TH CMa Nan Knc NP MM CN TW VN MY PH Pal Mno Crg ID Clb Bli**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: New to the fauna of Mindanao Island.

86.*Chasmina* sp.

Material studied: 2 ex. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

87.*Chrysodeixis eriosoma* (Doubleday,1843) (Figs 47-49)

Synonym(s): eriosoma Doubleday,1843; verticillata Guenée,1852

Original reference: *Plusia eriosoma* Doubleday,1843, [in] Dieffenbach, Trav. New Zealand 2: 285.

Range (in code):**Tah NZ ID Ja Sum Tim Flo Sbw Bor PG TH Cbi CMa CDo Cuo Cu01 Cu06 Cu07 Nrt Bnk Nst VN MY KH MM IN NP PK CN TW JP KP KR PH Boh Mno Crg NF NIr NC FJ AU OM SY EG**

Material studied: 8♂(GP3105) Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: Previously reported and illustrated by the authors from Bohol Island (Kemal *et al.,* 2019). New record for the fauna of Mindanao Island.

88.*Chrysodeixis heberachis* (Strand,1920) (Fig. 70)

Synonym(s): heberachis Strand,1920

Original reference: *Phytometra heberachis* Strand,1920, Ark. Naturg. 84 (12): 128. Syntypes: [Taiwan]: Formosa (DEI).

Range (in code): **TW PH Luz Ceb Mdo Mno Crg ID Ja Clb JP**

Material studied: 1♂ (Barcoded by the Cesa, Lep-Noc005), 1♀. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: This species belongs to the *kebea*-group of the genus *Chrysodeixis*. It was described from Formosa, and later reported also from the Philippines (Luzon, Cebu and Mindoro Islands) (Behounek et al., 2010). The genetic distance between our specimen from Mt. Caragan presented here and C. *heberarchis* from Formosa (ex Boldsystems) is 0.8%. Therefore, Caragan population is considered here as *Chrysodeixis heberarchis* at species level.

The present record is new for the fauna of Mindanao Island.

Figs 47-49 – *Chrysodeixis eriosoma*. Male genitalia, aedeagus with everted vesica and abdominal scent organ. Same aedeagus is shown below before eversion its vesica (GP3105). Philippines: Mindanao Is., Davao, Mt. Caragan.

89.*Condica stellata* (Moore,1882)

Synonym(s): stellata Moore,1882

Original reference: *Prospalta stellata* Moore,1882, [in] Hewitson & Moore, Descr. Indian lepid. Insects Colln Arkinson: 111. Syntypes ♂♂: Sikkim (BMNH).

Range (in code): **TH CMa Nan IN SI NP LA CN ID Clb PG PH Mno Crg**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: New to the fauna of Mindanao Island.

90.*Conservula indica* (Moore,1867)

Synonym(s): indica Moore,1867

Original reference: *Phlogophora indica* Moore,1867, Proc. zool. Soc. London 1867: 57. Type: India: Bengal (coll.A.E.Russell).

Range (in code): **TH CMa CDo Pki PK IN NP BD MY ID Clb LA VN CN TW PH Mno Crg**

Material studied: 5♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: Previously reported by Kemal et al. (2018) from Caragan as "sp.". New species for the fauna of the Philippines.

91.*Corgatha semipardata* (Walker,1861)
Synonym(s): semipardata Walker,1861
Range (in code): **MY Bor Swk TH CMa Lmp Cph Nrt IN NP MM LA ID Sum PH Luz Pal Neg Mno Crg CN**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record for the fauna of Mindanao Island.

92.*Craniophora* sp.
Range (in code): **PH Mno Crg**
Material studied: 2♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

93.*Craniophora fasciata* (Moore,[1884]) / *malesiae* Holloway,1989 (Figs 50, 51)
Material studied: 1♀ (GP3014). Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: External morphology of Caragan specimens are similar to *fasciata* Moore. The female genitalia (GP3104) doesnot fit to that of *malasiae*, illustrated by Holloway. Perhaps the mtCOI of the Caragan specimen will be helpful in identifying it.

Figs 50, 51 - *Craniophora* near *fasciata*. Female upperside and the genitalia (GP3104♀). Philippines: Mindanao, Davao, Mt. Caragan.

94.*Daddala brevicauda* (Wileman & South,1921)
Synonym(s): brevicauda Wileman & South,1921; achaeopsis Prout,1922
Original reference: *Sypna brevicauda* Wileman & South,1921, Entomologist 54: 202-203. Syntypes ♀♀: Philippines, Luzon: Haight's Place, Manila.

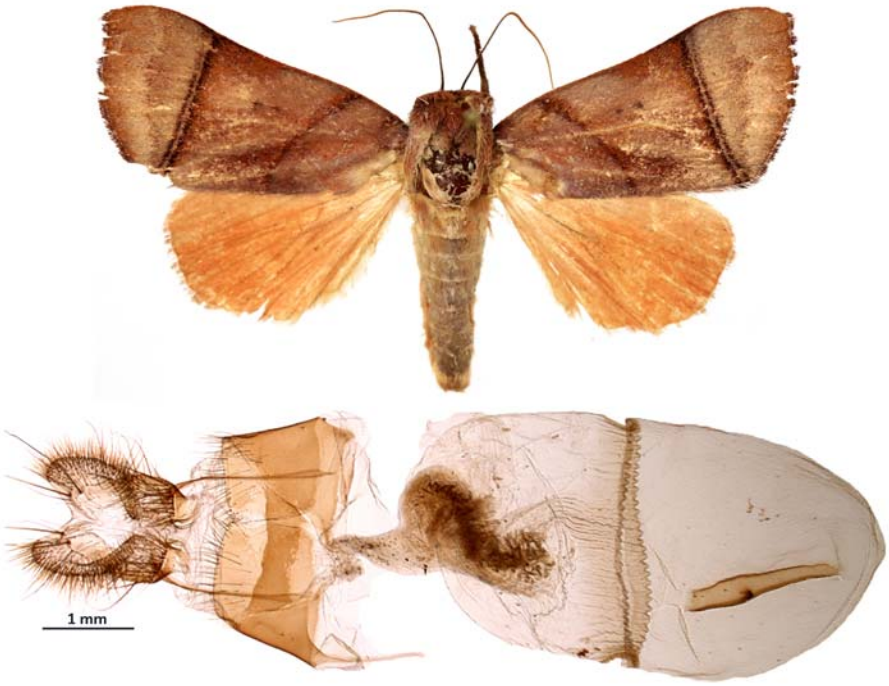
Range (in code): **PH Luz Mnl Mno Crg MY Bor ID Sum Tim Flo Clb Mlc Crm Ij PG TH CMa Dst Ds08 Int Kao Nrt Knc LA VN BT NP IN**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: Originally described from Luzon Island. New record for the fauna of Mindanao.

95.*Daddala microdesma* (Berio,1958)

Synonym(s): #microdesma A.E.Prout,1928; microdesma Berio,1958
Original reference: *Sypna achaeopsis* ab. *microdesma* A.E.Prout,1928, Bull. Hill. Mus. Witley 2: 173.
Range (in code): **TH Nan Dpk MY Pah Prk Bor ID Sum PH Mno Bkd Ktd Crg**
Material studied: 2♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

96.*Diehlea neotumida* Yoshimoto,1999 (Figs 52, 53)

Synonym(s): neotumida Yoshimoto,1999
Original reference: *Diehlea neotumida* Yoshimoto,1999, Trans. lepid. Soc. Japan 50 (2): 125-126, figs.5, 6, 11. Holotype ♂: Philippines, Mindanao, Mt. Busa.
Range (in code): **PH Mno Busa Crg**
Material studied: 1♀ (GP3088). Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.



Figs 52, 53 - *Diehlea neotumida*. Female genitalia, GP3088. Upperside of the female. Philippines: Mindanao, Davao, Mt. Caragan.

97.*Elydnodes ornata* Wileman & West,1929 [8] (Fig. 71)

Synonym(s): ornata Wileman & West,1929
Original reference: *Elydnodes ornata* Wileman & West,1929, Novit. zool. 35: 22-23. Holotype ♂: Philippines, Luzon, Benguet, Klondyke 800ft. (BMNH).

[8] **Behounek,G. & V.Kononenko,** 2011. A review of the genera Elydnodes Hampson, 1913 and Antitrisuloides Holloway, 1985 with description of two new species (Lepidoptera, Noctuidae). Revision of Pantheinae, contribution III. *Zootaxa* 3108: 41-52, figs. [full-text requested, but could not be obtained; therefore, this paper could not be examined].

Range (in code): **PH Luz Mno Crg**
Material studied: 1♂ (Barcoded by the Cesa, Lep-Noc007). Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: This species was described from Luzon Island (Philippines). Our specimen (illustrated) fits well to the holotype of *ornata* (*cf.* https://zenodo.org/record/200972#.XNZV8dSLTDc).

98.*_Episparis philippinensis_ Yoshimoto,1999 (Figs 54-56)

Synonym(s): philippinensis Yoshimoto,1999
Original reference: *Episparis philippinensis* Yoshimoto,1999, Tinea 16 (1): 4-5, figs. Holotype ♂: Philippines, Mindanao I., Mt. Busa (BMNH).
Material studied: 1♂ (GP3097). Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector. Another male collected from Canlaon Mt. (Negros Is.) is also found in the Cesa Collection.
Remarks: This endemic species was recorded from Philippines, Mindanao I. (terra typica), and Negros I. (Mt. Canlaon and Mt. Tindug Bato) (paratypes) (Yoshimoto, 1999).

Figs 54-56 – *Episparis philippinensis*. Male genitalia scaled, and terminal abdominal segment (GP3097♂). Upperside of the male. Philippines: Mindanao, Davao, Mt. Caragan.

99.*Ercheia cyllaria* (Cramer,[1779])

Synonym(s): cyllaria Cramer,[1779]; cyllota Guenée,1852; fusifera Walker,1858; signivitta Walker,1858; polychroma Walker,1858; atrivitta Walker,1864; purpureilinea Walker,1864; semipallida Walker,1864; gundiana Felder,1874; costipannosa Moore,1882; pannosa Moore,1883; uniformis Moore,1883; anvira Swinhoe,1918
Original reference: *Phalaena Noctua cyllaria* Cramer,[1779], Uitl. Kapellen 3: 100.
Range (in code): **IN TH CMa Dst Int Cmz Cz11 Nan Dpk Ntt Hba Pgg Knc Cbi MY LA VN MM NP BD LK CN TW PH Luz Pq Neg Mno Crg Pan Bly Ley Blc ID Sum Bor Tim Flo Sbw Clb Ij Mlc Crm Amb PG AU**
Remarks: Previously reported by Kemal *et al.* (2018) from Caragan. Common and very variable species.

Material studied: 6♂♀. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

100.*Ericeia inangulata* (Guenée,1852)

Synonym(s): inangulata Guenée,1852; optativa Walker,1858; optatura Walker,1858; zeta Walker,1864; intracta Walker,1864; comitata Walker,1865; umbrosa Walker,1869; subcinerea Snellen,1880; intextilia Schultze,1908; levuensis A.E.Prout,1929; certilinea A.E.Prout,1929

Range (in code):**ZA WS PG MY Bor Swk IN TH Nrt Kao CMa CDo Fn Php LA KH VN BD LK PK Thu Abb JP CN TW ID PH Boh Pan Bly Mno Crg MG RE**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: New record for the fauna of Mindanao Island.

101.*Ericeia pertendens* (Walker,[1858])

Synonym(s): pertendens Walker,[1858]; gonioptila A.E.Prout,1922; eurytaenia A.E.Prout,1929; occidua A.E.Prout,1929; iopolia D.S.Fletcher,1957

Original reference: *Remigia pertendens* Walker,[1858], List 14: 1512. Type: [Sri Lanka]: Ceylon.

Range (in code): **TH CMa Knc MY LA VN NP IN LK TW CN JP ID SB PG PH Mno Crg Neg Knl KP KR**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: New record for the fauna of Mindanao Island.

102.*Gadirtha impingens* Walker,[1858]

Synonym(s): impingens Walker,[1858]; bufonia C.Felder & R.Felder,1862; tinctoides Snellen,1877; guineana Swinhoe,1918; buruensis A.E.Prout,1926

Original reference: *Gadirtha impingens* Walker,[1858], List Spec. lepid. Insects Colln Br. Mus. 13: 1103. Syntypes: "Hindostan, Hong Kong".

Range (in code): **MY Bor PG ID Bru IN CN HK SB AU QAu Bsm PH Boh Mno Crg**

Material studied: 2♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: New record for the fauna of Mindanao Island.

103.*Goniophila excavata* (Swinhoe,1905)

Synonym(s): excavata Swinhoe,1905

Original reference: *Cosmophila excavata* Swinhoe,1905, Ann. Mag. nat. Hist. (7) 15: 158. Type ♀ : "Sadong, Borneo (Shelford)".

Range (in code): **MY Bor TH Knc Tng ID Sum Ja PH Mno Crg**

Material studied: 1♀. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: New to the fauna of Mindanao Island.

104.*Grammodes geometrica* (Fabricius,1775)

Synonym(s): geometrica Fabricius,1775; ammonia Cramer,1780 nec Esp.,[1794]; orientalis W.Warren,1913

Original reference: *Noctua geometrica* Fabricius,1775, Ent. Syst.: 599. Type: "India orientali".

Range (in code): **TH Knc LA KH VN MM IN Mh Nsk Mys Bang NP PK Txl Abb CN TW JP PH Boh Mno Crg ID Sum Bor KBa Clb AU QAu GH MG**

Material studied: 1♀. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: New record for the fauna of Mindanao Island.

105.*Helicoverpa armigera* (Hübner,[1808]) (Map 1)

Synonym(s): obsoleta auct. nec Fabr.,1775; barbara Fabricius,1794 [rejected]; armigera Hübner,[1808]; pulverosa Walker,[1857]; uniformis Wallengren,1860; commoni Hardwick,1965; rama Bhattacherjee & Gupta,1972.

Original reference: *Noctua armigera* Hübner,[1808], Samml. eur. Schmett., Noct. 2: Taf.79, fig.370. Type: [Europa].

Range (in code): **Md Cn DZ MA TN PT ES Mu FR Co Sa Si IT MT IE GB BE NL DE CH AT PL CZ SK HU RO YU AL BG GR TR DK NO SE FI EE LV LT RU MD UA BY IR Fa Lo By Yas Ke Ui Ku PK Bl Qu AF Ca Gbh Hr Srb Kab Arh Dwe ZA Gau Pre Jh Tva Lpo Spb Mdk CA MX GT CR PA JM IQ JO IL Pa Rd US Tx Cf VE CV BR PE CL ZR SD KE Nta Kzu Dbn Mv Cto Ec Grh Wca Kny Cto YE Ad SY LB Bei JP Ch IN Hp Sml Gs Drm Cp Nl Ddu Up SI NP SG LK ID Ja NAu QAu**

Bri NSw Syd TS NZ Hw WS PC FJ TO EL NH SB PG AU MY Prk OW NC CY Agh Hf TH CMa CDo Cuo Cu07 KK Osh Elb Lvv Th Dam Kd Snj Mz Gls Kh Gh Mia Kz Ss Chh Kda Cai Bli Sbw Sba Kai GG AZ AM Cc Ro Kr St Kb Kc Nt Ich Ing Da Kyi ET ET24 CV Az Md Kndy Pdy Dck Smt Bjo Lag Kir Bku Der Abe Clo Lbs PH Mno Crg 01 04 05 06 08 13 14 16 20 25 26 28 30 31 33 36 37 44 46 47 49 50 51 53 56 57 58 61 63 65 71 75
Material studied: 2♂♀. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

106.*Hypersypnoides ochreicilia* (Hampson,1891)
Synonym(s): ochreicilia Hampson,1891
Range (in code): **IN Nl TH CMa Php CDo MAl Nan Dpk ID Sum Bli PH Mno Crg**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record for the fauna of Mindanao Island.

107.*Hypocala deflorata* (Fabricius,1794) (Map 2)
Synonym(s): deflorata Fabricius,1794; australasiae Butler,1892; moorei Butler,1892.
Original reference: *Noctua deflorata* Fabricius,1794, Ent. Syst. 3 (2): 127. Type(s): India orientali.
Range (in code): **ZA Lpo Tva Spb Mdk WS FJ AU LK Dck IN Mh Nsk Nl TH CMa Int CDo VN NP ID CN TW JP KP KR RU Us NZ Hw MG ET ET24 PH Mno Crg**
Material studied: 4♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record for the fauna of Mindanao Island.

108.*Hypocala violacea* Butler,1879
Synonym(s): violacea Butler,1879; clarissima Butler,1892; kebeae Bethune-Baker,1906
Original reference: *Hypocala violacea* Butler,1879, Trans. ent. Soc. London 1879: 6. Syntypes: NE India: [Assam], Cachar.
Range (in code): **IN Ass Cac LK PG TH Knc CMa Cuo Cu07 Int MY VN NP ID Tim Flo PH Mno Bkd Ktd Crg TW JP KP KR**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

109.*Leucania* sp.
Range (in code): **PH Mno Crg**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: The identity of the specimen is still ongoing.

110.*Leucania yu* Guenée,1852
Synonym(s): yu Guenée,1852; exempta Walker,1857; costalis Moore,1877
Original reference: *Leucania yu* Guenée,1852, Hist. nat. Ins. Spec. gén. Lépid. 5 (Noct.1): 78. Type: [Philippines]: "Manille. Coll. Lefebvre".
Range (in code): **NP IN TH Nan CMa Cuo Cu06 CDo CD2 MY ID Sum PH Luz Mnl Neg Mno Crg**
Material studied: 2♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

111.*Lineopalpa dealbata* (L.B.Prout,1926)
Synonym(s): dealbata L.B.Prout,1926; eueres L.B.Prout,1928
Original reference: *Anomis dealbata* L.B.Prout,1926, Entomologist 59: 79.
Range (in code): **MY Bor Swk ID Ja Sum Clb PG PH Mno Crg**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record to the fauna of Mindanao Island.

112.*Lopharthrum comprimens* (Walker,1858)
Synonym(s): comprimens Walker,1858; cluysenaeri Heylaerts,1888
Original reference: *Amphigonia comprimens* Walker,1858, List Specimens lepid. Insects Colln Br. Mus. 15: 1540.

Range (in code): **ID Sum BD Syl TH Knc CMa Dst Ds07 Cmz Mth Cmz Cz11 CDo LA VN IN CN PG PH Mno Crg**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record to the fauna of Mindanao Island.

113.*Lycimna polymesata* Walker,1860

Synonym(s): polymesata Walker,1860
Original reference: *Lycimna polymesata* Walker,1860, List Specimens Lepid. Insects Colln Br. Mus. 20: 215. Type: [Bangladesh]: Sylhet.
Range (in code): **BD Syl TH CMa Fn Php MM LA CN NP IN PH Mno Crg Dav**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New to the fauna of the Philippines.

114.*Macaldenia palumba* (Guenée,1852)

Synonym(s): palumba Guenée,1852; colligens Walker,1865
Original reference: *Hulodes palumba* Guenée,1852, Hist. Nat. Insectes, Spec. gén. Lépid. 7: 211.
Range (in code): **TH CMa Int MY MM VN IN NP CN TW PH Mno Crg ID Sum Ja Bor Clb AU**
Material studied: 1♂1♀. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record to the fauna of Mindanao Island.

115.*Masca abactalis* Walker,[1859]

Synonym(s): abactalis Walker,[1859]; leucogastralis Walker,[1866]; platypoda R.Felder & Rogenhofer,1874
Original reference: *Masca abactalis* Walker,[1859], List Specimens lepid. Insects Colln Br. Mus. 16 (1858): 9.
Range (in code): **SG MY Prk Bor Sbh TH Knc CN Yu ID Sum Ja Amb Tim Flo Clb Mlc Crm Wg Ij PG PH Mno Crg JP MM VN**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record to the fauna of Mindanao Island.

116.*Miaromima pangolina* (Holloway,1982)

Synonym(s): pangolina Holloway,1982
Original reference: *Westermannia pangolina* Holloway,1982, Intr. Moths SE Asia: 231.
Range (in code): **MY Bor Swk PH Mno Crg ID Sum Clb Bru IN Adm? TH CMa Cmz Cz10**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record to the fauna of Mindanao Island.

117.*Mocis undata* (Fabricius,1775) (Map 3)

Synonym(s): undata Fabricius,1775; archesia Cramer,1780; virbia Cramer,1780; gregalis Guenée,1852; bifasciata Walker,1865; philippiensis Strand,1917; uberia Wileman,1923
Original reference: *Noctua undata* Fabricius,1775, Syst. Ent.: 600. Type(s): India orientalis.
Range (in code): **PK K-P SL CM ZR KE ZW Har MU RU Sb Us CN TW JP IN Mh Nsk LK MM Adm Nk ID Ja Bor Swk Sda Sum Tim Flo Sbw PG PC ZA Nta Kzu Dbn TH CMa Cu0 Cu01 Knc Rng KH VN NP PH Boh Mno Crg**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New to the fauna of Mindanao Island.

118.*Oxyodes scrobiculata* (Fabricius,1775) (Map 4)

Synonym(s): scrobiculata Fabricius,1775; clytia Stoll,[1782]; vittata Fabricius,1794; ochreata Rothschild,1915; samoana Tams,1935; tanymekes Tams,1935; novaehebridensis Viette,1951; obscurior Holloway,1979
Original reference: *Noctua scrobiculata* Fabricius,1775, Syst. Ent.: 252. Type(s): "India Orientalii".
Range (in code): **TH CMa Cu0 Cu01 Cu07 Cz10 Cmz CDo Dst Ds09 Int Phr Nrt Knc Sbu Bnk Cph Cbi Pht Cbu MY Bor VN LK Dck Pdy IN NP CN TW JP KP KR ID Sum Sba Tim Flo PG WS NH NC FJ PH Mno Crg Bkd Ktd**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

119.*Pangrapta* sp.
Range (in code): **PH Mno Crg**
Material studied: 2 ex. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: Identificaton process for this species is ongoing.

120.*Platyja minutipuncta* Swinhoe,1901
Synonym(s): minutipuncta Swinhoe,1901
Original reference: *Platyja minutipuncta* Swinhoe,1901, Ann. Mag. nat. Hist. (7) 7: 497-498. Syntypes 2♂: Singapore, Jaintia Hills.
Range (in code): **IN SG MY Bor SG TH ID Sum Clb PH Mno Crg**
Material studied: 2♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record to the fauna of Mindanao Island.

121.*Plusiopalpa adrasta* (R.Felder & Rogenhofer,1874) (Fig.1)
Synonym(s): adrasta R.Felder & Rogenhofer,1874; crassipalpus Hampson,1894; shisa Strand,1920
Original reference: *Plusia adrasta* R.Felder & Rogenhofer,1874, Reise Fregatte Novara 2 (2) (4): pl.110.
Range (in code): **TH CMa Dst MY IN NP TW ID Sum Ja Bor Tim Flo Sbw Clb Bli PG Bsm NIr PH Boh Luz Mno Crg KP KR JP**
Material studied: 3♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record to the fauna of Mindanao Island.

122.*Pseudosphetta* sp.? n.
Range (in code): **PH Mno Dav Crg**
Material studied: 1♂ (Barcoded by the Cesa, Lep-Noc008). Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: The identity of the specimen is still ongoing.

123.*Pterocyclophora hampsoni* Semper,1900
Synonym(s): hampsoni Semper,1900
Original reference: *Pterocyclophora hampsoni* Semper,1900, Reisen Archipel. Philipp. 2: 541, pl.60 fig.16. Syntypes 2 ex: Luzon.
Range (in code): **PH Luz Ley Blc Mno Crg Neg Mpl**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record to the fauna of Mindanao Island.

124.*Pterogonia cardinalis* Holloway,1976
Synonym(s): cardinalis Holloway,1976
Original reference: *Pterogonia cardinalis* Holloway,1976, Moths of Borneo with special reference to Mont Kinabalu: 28. Holotype ♂: Indonesia, East Java, Singolangoe Tengger (BMNH).
Range (in code): **TH CMa Lmp Knc MY Bor Swk Sbh KBa ID Sum Ja Bli Clb Bru Crm PG AU QAu PH Luz Neg Mpl Mno Crg Ley Blc**
Material studied: 2♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record to the fauna of Mindanao Island.

125.*Ptisciana seminivea* Walker,1865
Synonym(s): seminivea Walker,1865; lilacina Moore,1888
Original reference: *Ptisciana seminivea* Walker,1865, List. Specimens Lepid. Insects Colln Br. Mus. 33: 912-913. Lectotype ♂: Borneo, Sarawak (OUMNH).
Range (in code): **IN SI Djl MY Bor Swk TH CMa Nan Nna ID Sum Clb Ja PH Pal Mdo Luz Neg Mpl Mno Crg NP LK VN CN Yu**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New species for the fauna of Mindanao Island.

126.*Ptyonota formosa* Hampson,1894

Synonym(s): formosa Hampson,1894
Original reference: *Ptyonota formosa* Hampson,1894, Fauna Br. India, Moths 2: 425.
Range (in code): **MM Tns ID Sum Bli SG MY Bor BN CN Yu PH Mno Crg**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: Previously reported by Kemal *et al.* (2018) from Caragan.

127.*Ramadasa pavo* (Walker,1856)

Synonym(s): pavo Walker,1856
Original reference: *Chasmina pavo* Walker,1856, List Spec. Lepid. Insects Colln Br Mus. 9: 147: Type: Ceylon.
Range (in code): **LK Pdy IN Adm MY Bor Sbh TH CMa Dst Dso8 PH Mno Bkd Ktd Crg Luz Pq CN ID Sum Clb**
Material studied: 2♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: Previously reported by Kemal *et al.* (2018) from Mt. Kitanglad (Mindanao).

128.*Risoba basalis* Moore,1882 (Fig. 72)

Synonym(s): basalis Moore,1882; #viridimargo W.Warren,1913
Original reference: *Risoba basalis* Moore,1882, [in] Hewitson & Moore, Descr. new Indian lepid. Insects Colln late Mr W.S. Atkinson (2): 91. Syntypes ♂♀ : "Cherra, Darjiling".
Range (in code): **LK IN SI Djl Meg Cpj NP VN CN TW PH Mno Crg Luz Mdo Pal MY Bor Sbh KBa ID Clb Sum**
Material studied: 5♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record to the fauna of Mindanao Island.

129.*Risoba calaina* Zerny,1916

Synonym(s): calaina Zerny,1916; obliqua A.E.Prout,1921; philippinensis A.E.Prout,1921; amabilis Roepke,1938
Original reference: *Risoba calaina* Zerny,1916, Annln naturh. Mus. Wien 30: 190-191. Type ♀ : "Tras, Pahang".
Range (in code): **ID Sum MY Bor Swk PH Mno Crg**
Material studied: 1♀ (GP3096) Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record to the fauna of Mindanao Island.

130.*Sasunaga leucorina* (Hampson,1908)

Synonym(s): leucorina Hampson,1908; olivaria Hampson,1908
Original reference: *Magusa leucorina* Hampson,1908, Cat. Lepid. Phalaenae Br. Mus. 7: 57.
Range (in code): **ID Clb Mlc PG MY Bor PH Mno Crg**
Material studied: 2♀. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: Previously reported by Kemal *et al.* (2018) from Caragan.

131.*Sasunaga longiplaga* W.Warren,1912

Synonym(s): longiplaga W.Warren,1912; basiplaga W.Warren,1912
Original reference: *Sasunaga longiplaga* W.Warren,1912, Novit. Zool. 19: 15. Syntypes: "Penang", "Gunong Ijau".
Range (in code): **IN Mh Nsk Ass Khs PG ID Ij Wg TH CMa Nan Lmp Rng NP MM MY Pen VN Bor ID Flo Bli Tim PH Mno Crg TW CN JP KP KR**
Material studied: 2 ex. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: This species is new for the fauna of Mindanao Island.

132.*Sasunaga tenebrosa* (Moore,1867)

Synonym(s): tenebrosa Moore,1867; albistrigata W.Warren,1913; bistriga W.Warren,1913; interstrigata W.Warren,1913; longistriata W.Warren,1913; dura Strand,1916; kala Strand,1916; albonotata Wileman & West,1928

Original reference: *Hadena tenebrosa* Moore,1867, Proc. zool. Soc. Lond. 1867: 59. Type ♂: "Bengal".

Range (in code): **PK Abb IN Mh Nsk AU ?PG NC SB NH FJ TH CMa CDo PH Luz Mno Crg**

Material studied: 1♀. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: This species is new for the fauna of Mindanao Island.

133.*Simplicia griseolimbalis* Snellen,1886 (Figs 57, 58)

Synonym(s): griseolimbalis Snellen,1886; rufa Prout,1929; occidentalis Holloway,1982

Original reference: *Simplicia griseolimbalis* Snellen,1886, Tijdschr. Ent. 29: 47.

Range (in code): **TH Knc MY Bor Swk SG ID Sum Clb Mlc PH Luz Mno Crg PG SB**

Material studied: 3♂ (GP3098) Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: Previously reported by Kemal *et al.* (2018) from Caragan as "sp.". New record to the fauna of Mindanao Island.

Figs 57, 58 - *Simplicia griseolimbalis*. Upperside of male and scaled male genitalia, GP3098♂. Philippines: Mindanao, Davao, Mt. Caragan.

134.*Spodoptera litura* (Fabricius,1775)

Synonym(s): litura Fabricius,1775; histrionica Fabricius,1775; elata Fabricius,1781; ciligera Guenée,1852; tasmanica Guenée,1852; subterminalis Walker,1856; glaucistriga Walker,1856; declinata Walker,1857; albisparsa Walker,1862; evanescens Butler,1884

Original reference: *Noctua litura* Fabricius,1775, Syst. Ent.: 601. Type(s): India orientalis.

Range (in code): **DZ Out Perr Ktr Bsk Abe OM IR Fa Hz Ss IQ Agh Bgd Amr Bsr Qr EG NC WS PC FJ TO NH SB PG AU MY Bor Swk PK Pj IN Mh Nsk Cn JP TH CMa Cuo Cu01 Cu07 PH Mno Crg**

Material studied: 2♀. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Remarks: New record to the fauna of Mindanao Island.

135.*Stictoptera* sp.1

Range (in code): **PH Mno Crg**
Material studied: 1♀. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

136.*Stictoptera* sp.2
Range (in code): **PH Mno Crg Bkd Ktl**
Material studied: 1♀. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998; Mindanao Is., Bukidnon, Mt. Kitanglad, local collector.
Remarks: The identities of *Stictoptera* specimens are still ongoing.

137.*Tiracola aureata* Holloway,1989
Synonym(s): aureata Holloway,1989
Original reference: *Tiracola aureata* Holloway,1989, Moths of Borneo 12: 94, pl.1 figs.77, 83. Holotype ♂: Sarawak, Gunong Mulu NP.
Range (in code): **IN CN VN ID Clb PH Boh Mno Crg MY Bor Swk KBa TH CMa CDo PG**
Material studied: 2♀. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record to the fauna of Mindanao Island.

138.*Tiracola plagiata* (Walker,1857)
Synonym(s): plagiata Walker,1857; plagifera Walker,1857; #nigriclathrata W.Warren,1915
Original reference: *Agrotis plagiata* Walker,1857, List Specimens lepid. Insects Colln Br. Mus. 11: 740.
Range (in code): **WS PC TO PH Mno Crg PG AU MY Bor TH CMa Cuo Cu06 IN Ass Meg Khs LK Kndy Pdy NC**
Material studied: 2♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record to the fauna of Mindanao Island.

139.*Triorbis aureovitta* Hampson,1902
Synonym(s): aureovitta Hampson,1902
Original reference: *Triorbis aureovitta* Hampson,1902, J. Bomb. nat. Hist. Soc. 14: 209. Syntypes: India, Assam, Margharita; Malaysia, Penang (BMNH).
Range (in code): **TH CMa CN VN MY Pen Bor IN Ass ID Sum Ja Clb PH Pal Neg Ley Blc Mno Crg**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record to the fauna of Mindanao Island.

140.*Westermannia superba* Hübner,1823 (Fig. 73)
Synonym(s): superba Hübner,1823; westermanni Guenée,1852; gloriosa Hampson,1912
Original reference: *Westermannia superba* Hübner,1823, Zutr. Samml. exot. Schmett. 2: 23, pl.57 figs.323-324. Type: "Java".
Range (in code): **ZA MY Bor Swk SG ID Klt Sum Ja PG AU QAu TH CMa CDo CD2 Dst Ds09 IN LK Pdy PH Pal Mno Crg CN Yu**
Material studied: 3♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record to the fauna of Mindanao Island.

141.*Xanthodes transversa* (Guenée,1852)
Synonym(s): transversa Guenée,1852; migrator Walker,1858; dentalis Smith,1891
Range (in code): **PK Abb IN BD Syl ID Ja TH Chc Bnk Sbi Roi Sak PH Luz Pq Mno Crg AU QAu NSw PG**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record to the fauna of Mindanao Island.

142.*Zanclognatha* sp.
Range (in code): **PH Mno Crg**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: The identity of the specimen is still ongoing.

Notodontidae

The identity of the specimens are based upon the monographic work on the Notodontidae of the Philippines (Schintlmeister & Lourens, 2010).

143.*Allodonta (Hexafrenum) synthesina* (Schintlmeister,1993)

Synonym(s): synthesina Schintlmeister,1993
Original reference: *Hexafrenum synthesina* Schintlmeister,1993, Nachr. ent. Ver., Apollo, Suppl. 12: 138-139, figs. Holotype ♂: Philippinen, Mindanao, Bukidnon, 40km NW Maramag, Dalongdong 800m, Talakag.
Range (in code): **PH Mno Bkd Crg Neg Mpl**
Material studied:3♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

144.*Porsica intermediata* Schintlmeister,1993 (Fig. 74)

Synonym(s): intermediata Schintlmeister,1993
Original reference: *Porsica intermediata* Schintlmeister,1993, Nachr. ent. Ver., Apollo, Suppl. 12: 117, figs. Holotype ♂: Philippinen, Mindanao, Bukidnon, 40km NW Maramag, Talakag.
Range (in code): **PH Mno Bkd Crg**
Material studied: 2♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

145.*Somera viridifusca* Walker,1855

Synonym(s): viridifusca Walker,1855
Original reference: *Somera viridifusca* Walker,1855, List Spec. lepid. Insects Colln Brit. Mus. 4: 822. Type: [Bangladesh]: Sylhet.
Range (in code): **IN BD Syl LK TW ID Clb PH Luz Pal Mno Bnn Crg Bor MY Sum Ja NP TH TW VN Ton Fan Tgi Cuc M-c Tda N-l CN Yu**
Material studied:1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

146.*Stauropus albibasis* Schintlmeister,2003

Synonym(s): albibasis Schintlmeister,2003
Range (in code): **PH Mno Busa Crg Dav Ley Sam Luz**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

147.*Stauropus* aff. *alternus* Walker,1855

Material: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: The identity of the specimen is temporary.

148.*Stauropus hannemanni* Schintlmeister,1991

Synonym(s): hannemanni Schintlmeister,1991
Original reference: *Stauropus hannemanni* Schintlmeister,1991, Dt. ent. Z. (N.F.) 38: 112, figs. Holotype *: Philippinen, N.Luzon, Mts. Provinz Chatol 1600m, 15km SE Bontoc.
Range (in code): **PH Luz Pal Mno Bnn Bkd Crg Ley Neg Knl Pan Bly**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: Widely distributed in the Philippines, with several endemic subspecies. The present record belongs to ssp. *similis* Schintlmeister,1991.

149.*Syntypistis charistera* (West,1932)
Synonym(s): charistera West,1932
Original reference: *Stauropus charistera* West,1932, Novit. zool. 37: 211-212. Holotype ♂: Philippine Is., Mindanao, Lanao, Kolambugan (plains).
Range (in code): **MY ID Sum Bor Clb Ja Bli SG VN Bao Ann PH Luz Mno Crg Pal Pan**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

150.****Syntypistis comatus* (Leech,1898)**
Synonym(s): comatus Leech,1898; viridimaculata Matsumura,1922; bioculata Kiriakoff,1967; hasegawai Nakamura,1976; tanakai Nakamura,1976; mananangai Schintlmeister & Lourens,2010 [ssp.]
Range (in code): **CN Sz Yu ID Sum MY Bor PH Luz Pq Neg Mno Bkd Busa Ktd Dav Apo Crg IN MM TH VN Ton Fan Tda Cuc M-c N-l TW**
Material studied: 2♂1♀. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Pyralidae

151.*Agathodes* sp.
Range (in code): **PH Mno Bkd Crg**
Material studied: 3♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: The identities of the specimens are still ongoing.

152.*Agrioglypta eurytusalis* (Walker,1859)
Synonym(s): eurytusalis Walker,1859; opalalis Hampson,1891; episcopalis Meyrick,1938
Original reference: *Glyphodes eurytusalis* Walker,1859, List Specimens Lepid. Insects Colln Br. Mus. 17: 503-504. Type ♀ : "Sarawak, Borneo" (coll. Saunders).
Range (in code): **IN LK MY Bor Swk TW AU QAu ID Ja PH Mno Crg**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record to the fauna of Mindanao Island.

153.*Botyodes asialis* Guenée,1854
Synonym(s): asialis Guenée,1854; #liliputalis Strand,1913
Original reference: *Botyodes asialis* Guenée,1854, [in] Boisduval & Guenée, Hist. nat. Insectes (Spec. gén. Lépid.) 8: 321. Syntypes: "Inde centrale, Bengale, Népaul".
Range (in code): **LK MM TH NP Swk SG MY Bor TW PH Luz Boh CmM Mno Bkd Ktd Crg IN Sum Ja Clb Amb ID AU QAu ZA**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

154.*Endocrossis flavibasalis* (Moore,1867)
Synonym(s): flavibasalis Moore,1867; interruptalis Caradja,1933
Original reference: *Botyodes flavibasalis* Moore,1867, Proc. zool. Soc. London 1867: 96. Syntypes ♂♀ : India "Bengal".
Range (in code): **PH Luz Mno Crg IN Ass Ben SI BT NP CN Kwa TH Tng MM Prk MY PG PMo ID Sum Nia**
Material studied: 1 ex. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record to the fauna of Mindanao Island.

155.*Glyphodes stolalis* Guenée,1854
Synonym(s): stolalis Guenée,1854; substolalis Snellen,1899
Original reference: *Glyphodes stolalis* Guenée,1854, [in] Boisduval & Guenée, Hist. nat. Insectes (Spec. gén. Lépid.) 8: 293. Type ♂: "Indien".

Range (in code): **TH MM MY Sum Ja BN Sbh Swk MY SB CN TW PG PH Luz Ceb Mno Crg IN LK Ja Bor ID Clb AU FJ Vil ZA CM KM ZR GM GH KE RE MG NA NG SC SL UG ZW**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record to the fauna of Mindanao Island.

156.*Nevrina procopia* (Stoll,[1781]) (Fig. 75)
Synonym(s): procopia Stoll,[1781]; graphica Swinhoe,1916
Original reference: *Phalaena procopia* Stoll,[1781], [in] Cramer, Uitl. Kapellen 4 (29-31): 152, pl.368 fig.E.
Range (in code): **AC JP TW PH Luz Pq Ley Pao CmM Mno Crg IN BT LK Nia Ja Sgr Amb ID PG CN MY SG**
Material studied: 1♂1♀. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record to the fauna of Mindanao Island.

157.*Pachynoa circulalis* Sauber,1902
Synonym(s): circulalis Sauber,1902
Range (in code): **PH CmM Mno Crg**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record to the fauna of Mindanao Island.

158.*Pachynoa* sp.
Range (in code): **PH Mno Crg**
Material studied: 2♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: The identities of the specimens are still ongoing.

159.*Synclera traducalis* (Zeller,1852) (Map 5)
Synonym(s): traducalis Zeller,1852; retinalis Lederer,1857; univocalis Walker,1859; achatinalis Guenée,1862; chlorophasma Butler,1878
Original reference: *Eudioptis traducalis* Zeller,1852, K. VetenskAkad Handl. 1852: 54-55.
Range (in code): **JM PR Cn SE BG CY TR LB Bei SY IL Pa Hf EG EG11 IQ Mos Rwz Shq IR Ahz Fa Bu Shr AF Kot PH Luz Mno Crg IN LK ID Ja Clb Amb TH Bnk Chc Mhs Sup LY YE Ad AE SA BW CM ZR GO ET GM CI RE MG ML MZ NA SN SC SL ZA Lpo Tva Gau TZ ZW 01 31 33 46**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record to the fauna of Mindanao Island.

160.*Tyspanodes hillalis* (Schaus,1927) (Fig. 76)
Synonym(s): hillalis Schaus,1927
Original reference: *Phostria hillalis* Schaus,1927, Philippine J. Sci. 34 (3): 313-314, pl.2 fig.2. Type ♀ : Philippines: Luzon, Mt. Makiling (USNM).
Range (in code): **PH Luz Mno Crg Neg Mpl**
Material studied: 3♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.
Remarks: New record to the fauna of Mindanao Island.

Thyatiridae

161.*Thyatira philippina* Laszlo, G.Ronkay, L.Ronkay & Witt,2007
Synonym(s): philippina Laszlo, G.Ronkay, L.Ronkay & Witt,2007
Range (in code): **PH Mno Apo Crg**
Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

Thyridae

162.*Calindoea argentalis* (Walker,[1866])

Synonym(s): argentalis Walker,[1866]

Original reference: *Pyralis argentalis* Walker,[1866], List Specimens lepid. Insects Colln Br. Mus. 34: 1522. Type: Java.

Range (in code): **TH IN HK CN LK MM MY SG ID Sum Ja Bli Bor Clb PH Mno Crg**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

163.*Dysodia* sp.

Range (in code): **PH Mno Crg**

Material studied: 1♂. Philippines, Mindanao Island, Davao del Norte, Mt. Caragan, 20-26.01.1998, local collector.

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Figures (59-76)

All the species illustrated below are from Mt. Caragan (Mindanao I., Philippines).

Figs 59, 60 – *Barsine euprepioides* (Arctiidae) (left). *Abraxas* sp.?n. (Geometridae) (right).

Figs 61, 62 – *Hypochrosis hausmanni* (Geometridae) (left). *Hypochrosis hyadaria* (Geometridae) (right).

Figs 63, 64 – *Iridoplecta ferrifera* (Geometridae) (enlarged) (left). *Gastropacha (Estigena) philippinensis* (Lasiocampidae) (right).

Figs 65, 66 – *Calliteara horsfieldii* (Lymantriidae) (left). *Olene mendosa* (Lymantriidae) (right).

Figs 67,68 –*Avatha bubo* (Noctuidae) (left). *Bastilla joviana* (Noctuidae) (right).

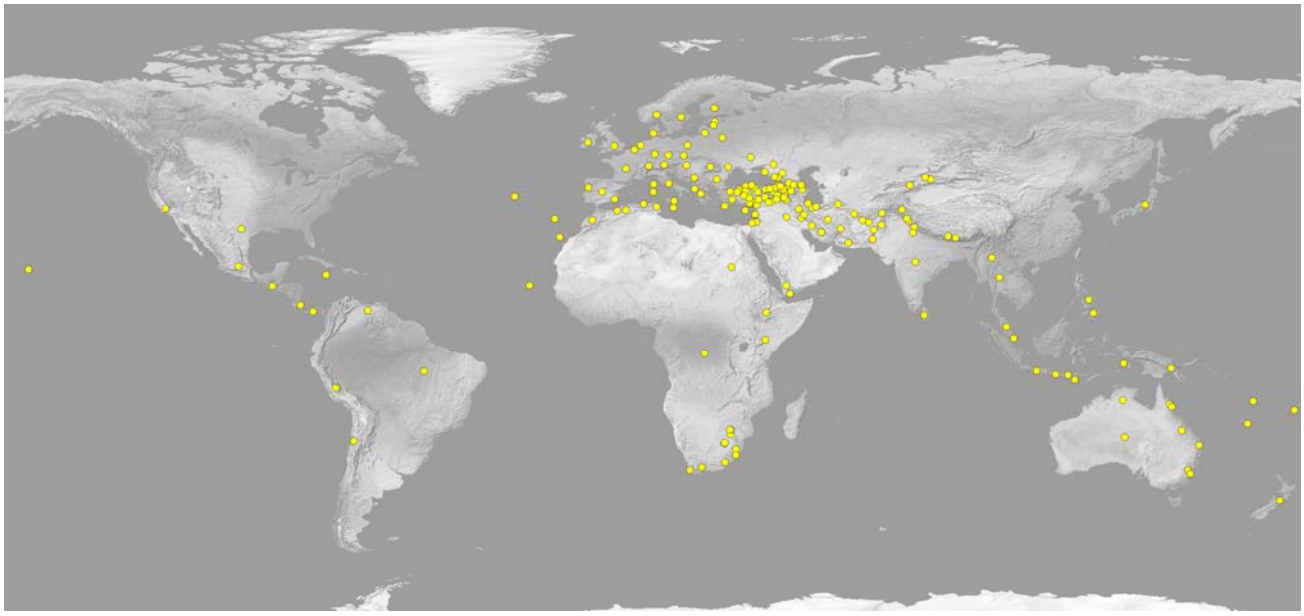
Figs 69, 70 –*Belciana hemodoides* (Noctuidae) (left). *Chrysodeixis heberachis* (Noctuidae) (right).

Figs 71, 72 – *Elydnodes ornata* (Noctuidae) (left). *Risoba basalis* (Noctuidae) (right).

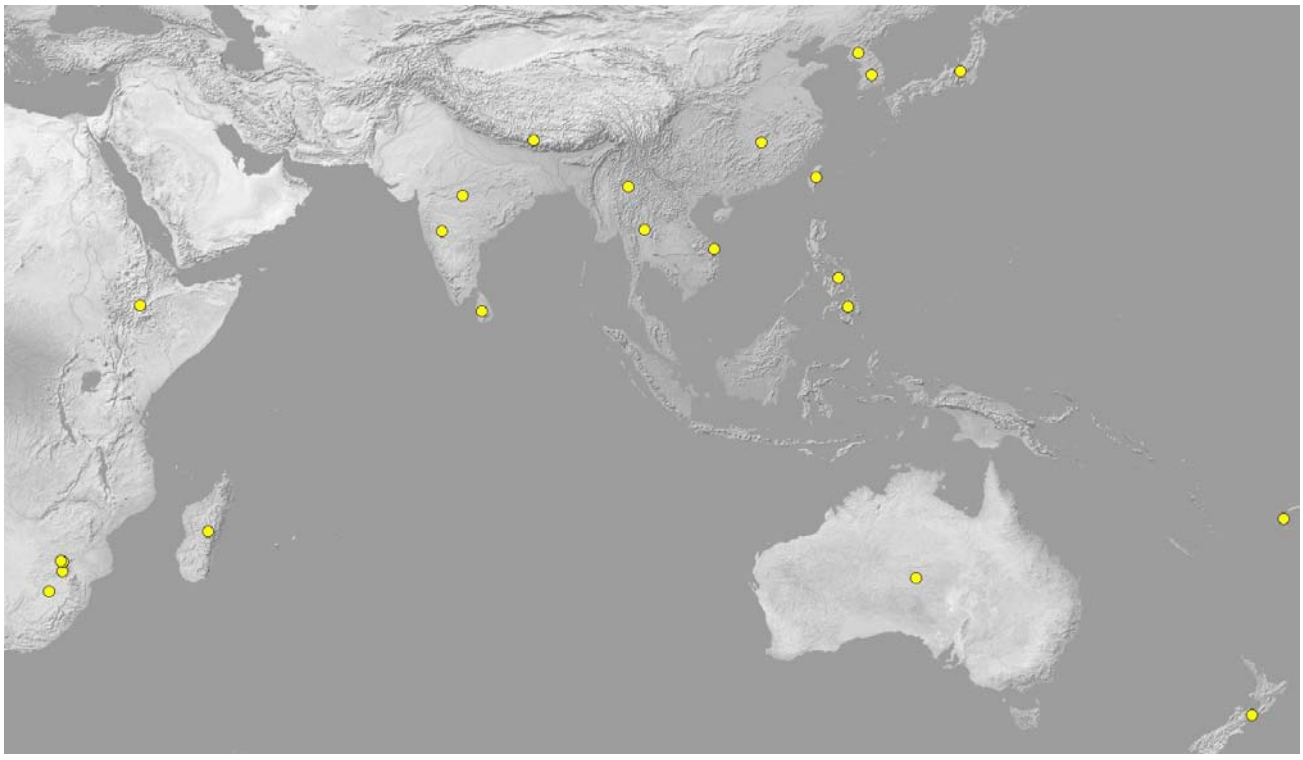
Figs 73, 74 –*Westermannia superba* (Noctuidae) (left). *Porsica intermediata* (Notodontidae) (right).

Figs 75, 76 –*Nevrina procopia* (Pyralidae) (left). *Tyspanodes hillalis* (Pyralidae) (right).

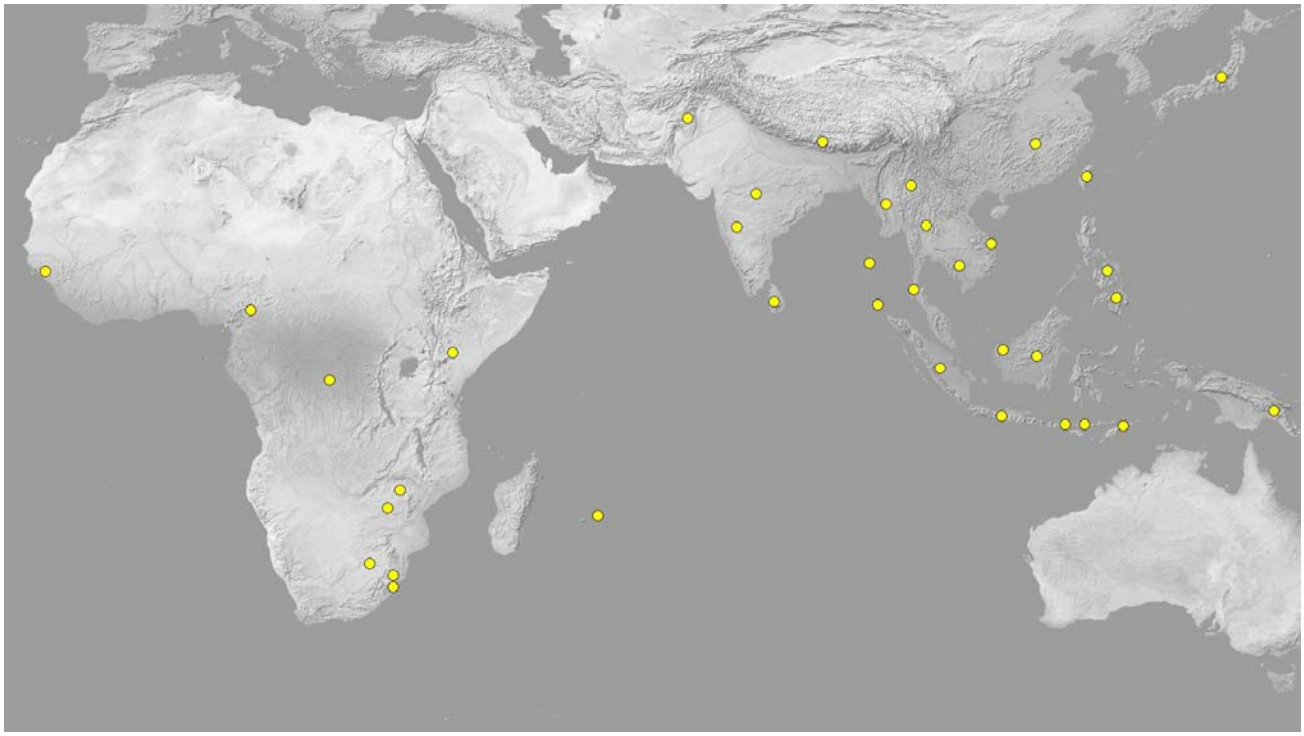
Maps



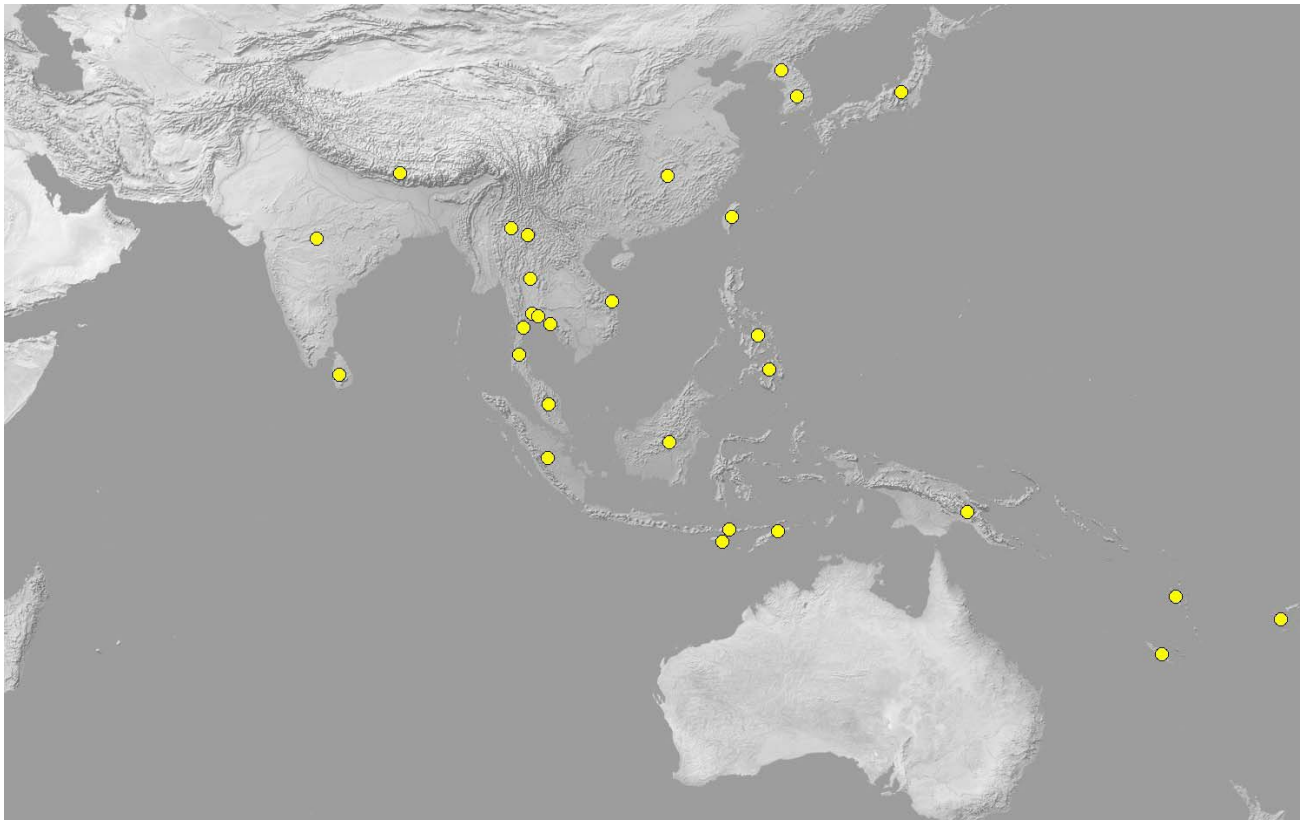
Map 1 - *Helicoverpa armigera.*



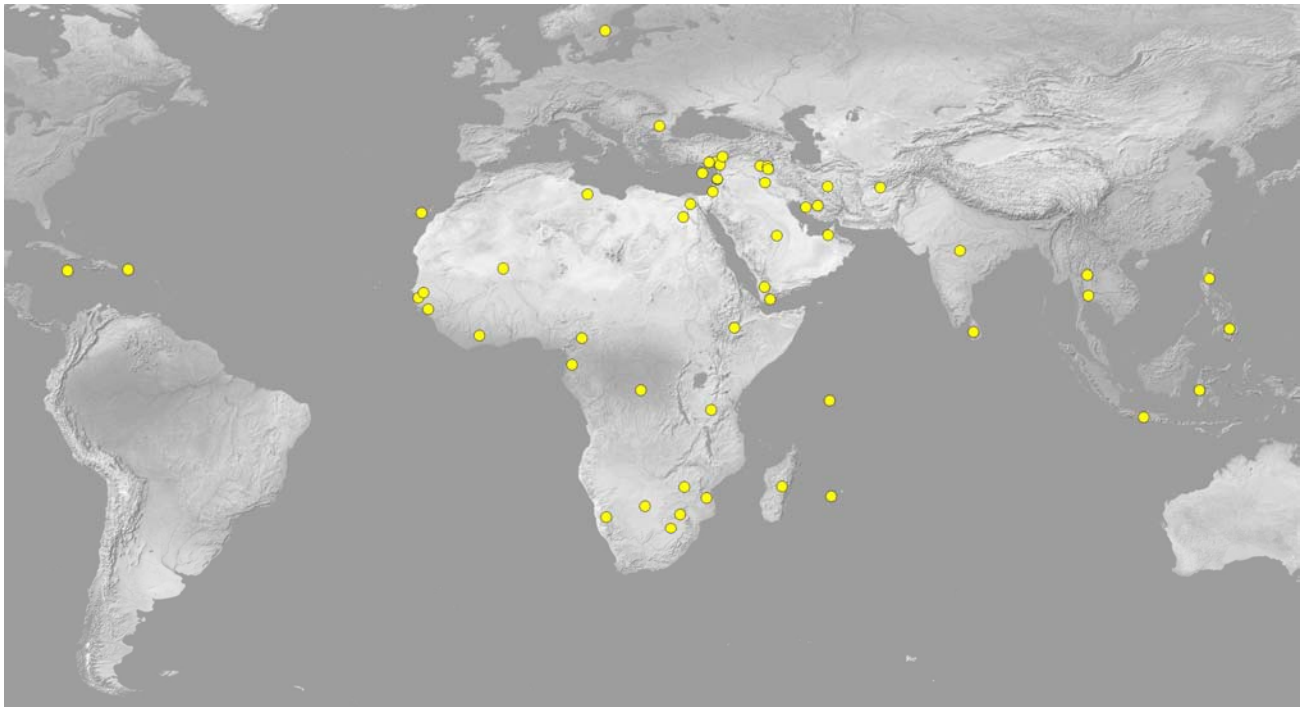
Map 2 - *Hypocala deflorata.*



Map 3 - *Mocis undata.*



Map 4 - *Oxyodes scrobiculata*



Map 5 - *Synclera traducalis.*

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